ROCKS and MINERALS

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Edited and Published by PETER ZODAC

July-August 1951

Contents for July - August, 1951

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CHIPS FROM THE QUARRY

GEM PRIZE WINNER —MRS. HELEN COOKE

A housewife and her husband won a gold cup first-prize award in a gem and jewelry contest for Chicago amateur craftsmen.

Helen and Goff Cooke of 2952 N. LaVergne, Chicago 41, Ill., who had worked six months on a green malachite necklace and bracelet—were winners in a contest sponsored by the Chicago Lapidary Club, an amateur group.

The gold cup was presented Tuesday at the Chicago Natural History Museum where the complete display of jewelry craft work will go on display on June 1 for a month.

Chicago Daily News
Tues., May 29, 1951

(The Cookes won two First Prizes. The Chicago gold cup for—Best of Show of Jewelry Sets, and Robert Dalzell Memorial Trophy for—Best of Show of All Exhibits).

NATIONAL CONCLAVE

The Tacoma Agate Club's plans for the 1951 American and Northwest Mineralogical Societies Federated Convention to be held in Tacoma, Washington, on September 1, 2 and 3, 1951, are rapidly taking shape. Convention Hall will be the Masonic Temple, Fellowship Hall with ample room for both Commercial and Club displays. Any further information regarding this Convention can be obtained by writing

A. A. Porter, Display Chairman
6515 South Tacoma Avenue
Tacoma, Washington

Lots Of Information

Editor R & M:

Received the back numbers and they are swell. A lot of information for beginners, places to look for minerals, etc. I am well satisfied and have read them from cover to cover

Amel Priest
Peru, Iowa

May 31, 1951

WORLD'S DEEPEST LEAD MINE IN IDAHO

The Morning silver-lead-zinc mine at Mullan, Idaho, with a depth of 5050 feet, is believed to be the world's deepest lead mine. The workings at the 5050 foot depth are 940 feet below sea level.

Early records are not available, but since 1905 the mine has produced more than ten million tons of ore and earned in excess of $26,000,000.

The Morning claim was located July 2, 1844, by two prospectors, George C. Good and C. C. Earle, but the mine is now owned by the Federal Mining and Smelting Company.

—Compressed Air Magazine
11 Broadway, New York 4, N. Y.
May, 1951, p. 133

Mineralogical Club of Hartford 1951 Outings

May 12—Loudville, Mass.
May 27—Deerfield, Mass.
June 16-17—Great Notch, N. J.
July 8—Bedford, N. Y.
July 22—Roxbury—Judd's Bridge, Conn.
August 11-12—Grafton, N. H.—(Meet at Grocery Store, Grafton Center at 1:00 p.m.)
August 26—Westfield, Mass.
September 8-9—Tilly Foster, N. Y.
September 23—Chester, Mass.
October 7—Chester, Vt.
October 21—Open Date
November 4—Open Date

If you need transportation or direction or can take someone, call: Ralph Hills 6-8158 (Hartford, Conn.) Mrs. George Dunbar 6-1133 (Hartford, Conn.) George Robinson 7-9670 (Hartford, Conn.)

Come join the gang on the road awinding
To the land of the rockhounds dream
Where the crystals are for the finding
And the delight of finding supreme.

—A Nonie Mouse

REPRINTS AVAILABLE

There have been so many requests for reprints lately that the following bit of information may be of value. They can be supplied and at the following rates:

100 copies	2 pages	$ 3.75
100 copies	4 pages	7.25
100 copies	6 pages	$10.25
100 copies	8 pages	12.75
100 copies	10 pages	15.00

All reprints must be ordered in advance, before the articles make their appearance in print.

ROCKS and MINERALS

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PETER ZODAC

July-August
1951

MINERALS OF THE ARLINGTON TRAP ROCK QUARRY ON GOOSE CREEK, LOUDOUN CO., VA.

By FRENCH MORGAN

2601 Brentwood Road, N. E., Washington 18, D. C.

The writer first became aware of this quarry during the fall of 1943 when the newly organized Mineralogical Society of the District of Columbia made a field trip to the locality. It was an old producing quarry at that time, and has probably been in operation for 45 or 50 years, for when collecting was being done in 1915 by Earl V. Shannon of the U. S. National Museum, the workings were reported as being of considerable size.

The quarry is located a mile and one-half south of Virginia highway No. 7, at the Belmont station of the Washington and Old Dominion R. R., and is the favorite collecting spot of Washington rockhounds, since in addition to being an hours drive from the city, more minerals are to be found there than in any other one day trip. The accompanying map shows all necessary details for reaching the spot.

It is not the purpose of this article to go into the geology, mineralogy or petrology of the locality, since that was done in a quite thorough manner in 1924, by Earl V. Shannon, at that time Assistant Curator of Geology, U. S. National Museum, in his paper entitled The Mineralogy and Petrology of Intrusive Triassic Diabase at Goose Creek, Loudoun Co., Va. (Proceedings of the U. S. National Museum, Vol. 66, Art. 2, pp. 1-86). A description of the formation with particular mention of its zeolites was contained in an article by James H. Benn, of the Museum, which appeared in ROCKS AND MINERALS for May, 1944. Reference to these authorities, especially Shannon, will answer all questions of the most exacting unless it be the purely amateur collector like myself who can ask more questions than a wise man can answer.

The ridge on which the quarry is located is entirely composed of intrusive trap rock which is criss-crossed by numerous joints and fissures running north-south and east-west. These joints are almost invariably coated by a black slickenside veneer of chlorite while in the seams hydrothermal alteration and deposit from solution has resulted in most of the minerals found in the quarry. It is these seams that have particular attraction for the collector. In addition to joints and fissures numerous mirialitic cavities are encountered in various parts of the formation containing interesting crystals, albite being the most common mineral, and associated with diopside, titanite, hornblende, and others.

It is sufficient to state that Shannon classified the deposit as diabase, as noted in his paper, rather than trap rock or gabbro, made up of four types, all differing in some measure. First is the normal diabase in great part; second, an abundance of coarse grained diabase containing augite; third, other coarse masses like the above, containing in the main, albite and quartz, the titaniferous augite, which is characteristic of the first two types, being more or less completely replaced by diopside; and fourth, narrow dykes containing mainly quartz and albite.

That phase of the subject being summarily disposed of in a way anything but scientific, we hobbiests may come at once to the subject that interests us most—the minerals that may be found at the locality and their desirability for cabinet specimens when compared with material from

better known and more famous localities, such as Paterson, N. J., and others.

Minerals Reported at Goose Creek

ALBITE—One of the common minerals. Occurs in bladed crystals resembling pigeonite; also the most common mineral in small cavities; color, white to pale pink. Extreme diameter in cavities 4 mm.

APATITE — Crystals are very small. None have been noted by the writer or reported by members of the society.

APOPHYLLITE — Second most common mineral found in crevices. Shannon reports several crystal forms, but most of it is massive, filling seams. Seams up to two inches in diameter have been uncovered in blasting, and during the fall of 1949 one that measured up to six inches in a few places, was uncovered. The writer discovered this the morning after blasting, and was rewarded by locating a few cavities in the vein in which a few pink crystals up to one by two inches were found. (See page 42, ROCKS AND MINERALS, Jan.-Feb., 1951). Generally deposition has continued to the point where all crystals are engulfed, thereby destroying cabinet possibilities of what would otherwise make fine specimens. Occasional a vein is found in which the apophyllite is snow white, and when it is splotched with prehnite, a showy specimen results.

AXINITE — Reported in very small purplish-brown crystals, but the writer has not seen it. Probably the micro-mounter is aware of it.

BABINGTONITE—This mineral was not reported prior to 1947 when Phil Cosminsky, now President of the Washington Society, went with a fall field trip to the locality and opened up a few small cavities in the spot where epidote and pink feldspar are found. These contained minute crystals of what was later determined to be babingtonite. (See page 579 of ROCKS AND MINERALS for Nov.-Dec., 1950, for the full account.) So far as known this is the only Virginia locality for this mineral.

BYSSOLITE — This mineral is described as a hornblende in the cavities, all being an asbestiform byssolitic variety which is usually in masses of cottony snowy fibers, although the color occasionally varies to pale buff or light green. Cottony radiating masses are found in albite formation with crystals up to one-fourth inch long, while in seams the deposit is much longer. The writer has one specimen on which a one by three inch face is completely covered with crystals up to three-fourths of an inch long, making a nice cabinet specimen. There is some discussion as to whether this material is not a zeolite rather than a hornblende.

BIOTITE—Present in small grains and is never seen by the collector.

CALCITE—This is an interesting mineral at Goose Creek as well as at other quarries and mines. While not abundant, the collector can generally find a few specimens in some of its forms. The most usual crystals are rhombohedral and dog-tooth spar, with a little massive material. Color is clear, yellow and black. Most of it fluoresces white, yellow, green and orange. The writer found two small pieces that fluoresced a bright red under the Mineralight. No doubt considerable more of the latter could be found by using a light at night.

CHABAZITE—This is one mineral reported as found only as a drusy coating along very narrow cracks and never associated with other zeolites. At the State quarry at Goose Creek bridge, two miles distant, yellow crystals one-eighth inch square are found associated with epidote and microscopic crystals of heulandite.

CHALCOPYRITE — Found sparingly imbedded in the rock, crystals are generally small, measuring up to 3 mm.

CHLORITE — A green varnish on slickenside, making showy specimens; also found associated with epidote as small green spherules resting on small albite crystals. See diabantite.

CHRYSOCOLLA — Not reported by Shannon. The writer has found probably a half dozen specimens of albitic rock impregnated with the stain of chrysocolla sufficiently well to make attractive specimens.

DATOLITE—The fourth most common mineral found in cavities. Usually, crystals are not large but very interesting. In addition to the common form, flattened crystals are found up to one-half inch across the long face. Datolite makes good micro-mounts as well as cabinet specimens.

DIABANTITE—Joints are almost invariably coated by a black shiny slickenside. Not much attention was paid to this until it was noted it had been given the name listed above. Now a specimen reposes in our cabinet.

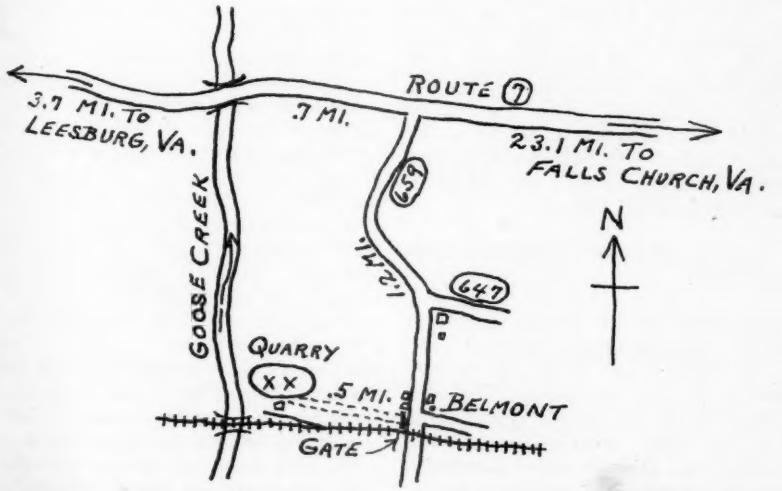
DIOPSIDE—Found in small cavities in crystals measuring up to 3 mm by 7 mm.

EPIDOTE—Appeals to the micro-mounter. Occurs as a druse and as crystals up to one-eighth inch long. Found plentifully at one spot in the south wall where it is associated with a vein of pink feldspar. Peculiar flattened crystals of hour-glass structure are met with, which appear beautiful under the microscope between crossed nicols.

EPISTILBITE—Not reported by Shannon, probably for the reason that he did not distinguish it, desmine and epidesmine, as being distinct from stilbite. The writer located two veins of epistilbite containing beautiful white crystals measuring half an inch long. Smaller crystals are white or clear and perfectly terminated.

FELDSPAR (PINK) — An almost perpendicular vein of this material 18 inches wide is noted on the southern central wall. Epidote and babingtonite are found associated with it. It appears this material should take a good polish and make attractive bookends and paper weights, splotched as it is with so many colors.

GALENA—Reported as very rare and in small particles. Members of the Washington society have not reported it.



ARLINGTON QUARRY, GOOSE CREEK, VA.

LAUMONTITE—The third most common mineral found in crevices. Is water clear when first found but has the discouraging habit of becoming white after drying, becoming friable and falling apart. However, some fine specimens may be preserved. It appears this mineral is being deposited at the present time, and it is the opinion of the writer that the newer material is the more difficult to save. This may be entirely in error.

OPAL (HYALITE) — One specimen reported by Shannon and there appears to have been no repeats.

PIGEONITE (PYROXENE) — Blade crystals have been reported ten inches long. This was formerly called augite, but in recent years this had been determined to be the much rarer form called pigeonite. During the latter part of May, 1951, the writer found a crystal measuring nine inches long. This mineral is found in great abundance either in light or dark matrix.

PREHNITE—The most abundant vein material and occurs in a variety of forms and colors. Also, probably, the most interesting mineral found in the quarry. It appears in bladed structure as one of the earliest zeolites, so called, to be deposited. All the usual crystal forms are found, including coxcomb measuring one-half inch long. Also unusual forms. The smaller crystals and forms are a delight to the micro-mounter, especially the very thin crystals elongated on the a axis, the hourglass and dumbbell forms.

PYRITE — Very few specimens have been found.

QUARTZ—This is another interesting Goose Creek item. Crystals are small, rarely over half an inch long, but are outstanding in point of interest. They are "crystal" clear, brilliant, and rich in extra faces and highly modified development characteristics. They are found plentifully deposited on prehnite, and more rarely in vugs with no other mineral. A few clusters will make cabinet specimens.

SPHALERITE—Another of the rarities. Shannon reported one specimen, and the writer found another during a field trip in 1945. Since then probably a half dozen others have been reported.

STILBITE—The fifth most common mineral found in crevices. Crystals are reported as being very small but the writer has found them an inch long, the color always being white. Clusters make attractive cabinet specimens.

TITANITE — This mineral was reported, but crystals had not been found, so far as known, prior to the fall of 1950. At that time the writer and others found many small crystals in albitic formation, the largest measuring one-eighth by one-fourth inch.

NATROLITE—It is with fear and trembling that this mineral is listed last, and out of order. No one with authority has definitely stated that it has been found. Only persons like myself think they have seen a few specimens, having nothing further than that on which to base the claim.

Naturally, a collector is intrigued by such an array of minerals at one locality—27 or 28 in number—but it is not quite as good as it sounds. The writer has made trips to Goose Creek and not carried away a specimen, while on other occasions the car trunk was filled with material to be sorted and culled. But that may happen also at more famous localities, for well remembered is the half day spent at Prospect Park Quarry at Paterson, N. J., when not a zeolite was spotted and the calcite and quartz not worth picking up. In addition to the uncertainty of being able to find anything, crystals are generally small. The reason for these conditions is the small number of mineralized fissures, and the narrowness of the fissures which generally become filled by the deposit leaving little or no room for crystallization.

The bright side of the picture is that larger specimens are found occasionally, and the mine run specimens average above those found elsewhere. Frequently several

zeolites will be found together in the same fissure, and when calcite, laumantite, quartz crystals, and apophyllite or others, are all found perched on a base of prehnite the resulting specimen is good enough for any cabinet. In addition to cabinet specimens and micro-mounts one other feature at Goose Creek will interest the mineral-minded — thin sections or transparencies. The writer has no experience along this line but has been advised by others that this is an interesting and fruitful field. Repeated trips will insure a good and colorful collections of all these lines.

The above is a brief account of conditions in general, conditions that leave much to be desired, since all of us cannot make repeated visits. But uncertainty as to what may be found is as impelling here as in the case of the fisherman who hopes some day to hook the big one, compelling us to make repeated trips as the years roll by.

An instance of this urge happened to us during 1948. A blast uncovered a crevice filled with rotted or friable material with the usual prehnite base on which were many clear to yellow stained crystals, loose crystals by the handfull being found at the bottom of the cavity. When a number of these were taken to an employee of the U. S. Geological Survey, the person became interested at once, if not a little excited, and wanted to know how much of the material was found, and could we get more. We were also advised to keep it quiet, for we might have something. Upon identification the material proved to be datolite containing much more water than the law allows—more water than reported heretofore. The intimation was that we would be justified in giving it a new name, but the opinion was that there are far too many subdivisions of the zeolite family as it is without loading it up unnecessarily.

The lure of a new mineral keeps taking us back to Goose Creek, and some day we may be successful—who knows. For Shannon stated that his work did not by any means exhaust the locality. The genial Superintendant, Mr. W. B. Metzger, address Leesburg, Va., has no objection to collectors who keep out of the way of workmen and strictly confine their attention to rocks.

IS BALTIMORE EXPERIENCING A MINERAL REVIVAL?

During the 1920's and 30's there was feverish mineral activity in Baltimore, then for various reasons the activity ceased for almost ten years. Now, with the organization of the B. M. S. last February, it is entirely possible that this activity will be resumed and surpass any previous heights.

In the three months that the B. M. S. has been in existence, we have gotten a good start in preparing ourselves as a nucleus for such a revival. We have learned much about minerals through Mr. Desautel's talks on crystallography and his micro-minerals, through a trip to the University of Pennsylvania collection, and through three field trips to the Dargan manganese deposits in Maryland, the Gap nickel mine in Lancaster Co., Penn., and the fire-clay pits at Frostburg, Md.

Of course we are not just interested in developing our own geological and mineralogical knowledge, but we want to spread the science to all who are interested. This doesn't mean standing on street corners or in auditoriums shouting mineralogy, but it does mean that if you see a person at work or in school who might be interested in the subject, talk to him about it in an attempt to stimulate his interest in our society and work.

—The Pegmatite (Official Journal of the Baltimore Mineral Society).

Best Rockhounds' Magazine!

Editor R & M:

R & M is without doubt the best Rockhounds magazine and believe me I know—I take 7 different ones.

Thanks very much for every issue received and may the magazine live as long as the rocks do.

Andy Haynes
Milwaukee, Wisc.

June 20, 1951

LUCKY STONES

By ROBERT D. ROOTS

3147 W. 39th Avenue, Denver 11, Colo.

I wonder how many rockhounds carry lucky stones or mineral pieces of some kind? I also wonder if they do help as I have quit carrying two of mine and have not noticed the difference. At the same time I am looking for a super-super that will lead to lots of fine specimens.

When I first started collecting about 1939, someone told me it was lucky to find a rock with a hole in it. Well south of Fallon, Nevada, when I was looking for Argillite, I found a piece of lava with ¼ inch holes all the way through it. The rock was about a 2 x 3 x 1½. There were about a dozen of these holes that I was informed were the work of tiny clams. I do not know if this is true or not and did not care as with so many holes it should be lucky. I was very lucky for the next two years. I do not know how much was due to the lucky stone but I do know I helped it an awful lot by working hard and traveling a lot of miles to run down cutting material. But it could not have been very lucky as it did nothing about the fine specimens I passed up for agates.

The next from California was a round yellow pebble about 1 x 1½ with two little round pebbles imbedded in it looking like eyes. Well I thought this is a lucky stone so I took it home and polished it. Placed it in the side pocket of the car to do its stuff. Well the harder I worked the luckier I was, but as I do not like work I kept on looking for another lucky stone. Come to think of it this hard working charm is still in the car.

The next I found was about five years ago. My pardner and I were about six miles east of Cisco, Utah, looking for agate pseudomorphs after barite balls. When sliced and polished they were wonderful specimens. We looked all day and found a little agate and some of the pseudomorphs even as large as 10 inches. The only trouble was that there was very little agate in them and lots of calcite filled with dirt. Not at all what we wanted. All I had found by this time were sore spots behind my ears from the wind trying to blow my elephant hat off causing the strap to chaff my ears. As we were coming back to the car I bent down and picked up a small concretion, about ¾ x 1½ and looking for all the world like the head of a little black man with two large eyes, big nose but no chin. Well this ought to be a lucky piece, big eyes to see with and also lucky as he has no mouth to tell everything he knows. I carried him for years and showed him to many friends. I even refused to sell him. And when shaking hands with a friend, I would rub him for luck. He worked for three years then at the El Paso, Texas show last year he got tired and failed me three times in a row.

Four years ago I was hunting agates on the Sweetwater agate beds near Split Rock, Wyoming. While looking around the old windmill that many of us remember, I found what is locally called a topaz. This is really a water clear piece of quartz with a slight smoky cast. This had been polished by the wind almost into a tricanter or three-sided stone. A beautiful effect can be seen by looking thru it as it has a clear center and a fine glazed polish on the outside. I had been told that these were very scarce and seldom found. So the little lucky man must have been on the job. Well maybe this will help so I put the piece of quartz into my lefthand pants pocket.

Well I was really loaded with luck now with a lucky stone in each pants pocket. But this luck seemed to work better the harder I worked, so two weeks ago I took them both out and retired them to a drawer. So now I am looking for another but better lucky stone, one that does not make me work so hard. I think I will look for a piece of turquoise as the Indians think that is a lucky stone and they do not like work any better than I do.

THE CAUSE OF RADIAL FRACTURING AROUND SOME ROCK MINERALS

By B. M. SHAUB
Smith College
Northampton, Mass.

Radial fracturing of the minerals surrounding certain other minerals is not uncommon, (Fig. 1). The central or core mineral is usually one which contains some of the rare-earth elements, as allanite. Such minerals frequently occur as well-developed or complete crystals in the medium-grained granite and basic pegmatites where they are usually surrounded by quartz or feldspar which often show the radial fractures. The rare-earth minerals are also found in some highly metamorphosed rocks where small amounts of mineral solutions originate from the more soluble constituents during the period of high temperatures. Compounds of the rare earths are occasionally dissolved in these early solutions and consequently the resulting pegmatite stringers produced when the solutions solidify contain rare earth minerals which are usually easily detected by the radial fracturing of the minerals about them.

While accompanying parties on field trips for minerals or with student groups studying other phases of geology it is not uncommon to hear some one refer to the core, around which the fracturing occurs, as being a radioactive mineral and that the fracturing is due to the radioactivity.

The correctness of such statements may be examined first by an examination of the structural relations about a known radioactive mineral. The rather old uraninite which occurs in the quartz at the McLear pegmatite near DeKalb Junction, New York shows neither radial fracturing in the quartz nor a smoky effect which has likewise been attributed to radioactivity. The small uraninite crystals in this case are easily removed from the

Fig. 1 Radial fracturing in feldspar surrounding allanite from a pegmatite in the anorthosite of Whiteface Mountain, New York.

quartz often without breaking the crystals. The quartz has a general whitish appearance but it is not of a milky color; the color being due to many minute unoriented fractures intersecting in a fine irregular arrangement which effectively scatters the light making it appear whitish instead of being practically clear and transparent as the minute pieces are when examined alone. The composition of this highly radioactive material, uraninite, is very close to UO_2 which is believed to be the original composition of much of the uraninite. It appears, from the ease with which the crystals can be removed from the quartz that the uraninite may have contracted more upon cooling than the quartz which completely surrounds the small uraninite crystals. Hence, one cannot say that radioactivity produces radial fracturing around the uranium minerals.

Frequently one may recover parts of the minerals, at the centers of the radial fracturing, which show good crystal outlines. Such crystals prove that the original mineral was completely crystalline at the time it had developed. It is not infrequent that the rare earth minerals, often as crystals, are completely inclosed in feldspars and other minerals, which shows that the inclosing mineral grew around the one inclosed. They also occur partly inclosed or surrounded.

Radial fracturing does not occur in only one plane cutting through the core and the surrounding minerals, but instead it extends completely around the mineral as an irregular concentric shell fractured throughout although the degree of fracturing varies and depends upon the arrangement and the tenacity of the surrounding minerals. Such fracturing can occur in any of a number of ways.

(1) The central mineral could have a very small shrinkage while the inclosing one could have a high shrinkage and be brittle enough to fracture radially. (2) The core mineral could have a high expansion while cooling down which is quite unlikely. (3) The inclosed mineral could change its crystal structure with decreasing temperature and thus change from one mineral to another with an increase of volume, the composition remaining the same. A change of this sort in minerals is not uncommon and is known as paramorphism. The change from a crystalline to an amorphous structure could also occur with increased volume. If an increase of volume were great enough considerable pressure would develop and a radial shattering would readily result and at the same time the resisting force or pressure could crush the central mineral from which the force and energy were developed. This process accounts for the fact that frequently the central mineral is so badly shattered that it, too, falls apart when the mass is broken open.

Many of the minerals with the associated radial fracturing are in fresh unaltered rocks, or where the alteration has been but slight and occurred at the time of final solidification of the associated minerals.

X-ray diffraction pictures can readily be made from the small amounts of material available from what was formerly good crystals about which the fracturing occurs. The pictures show that the internal structure of the crystal has changed from its original crystal lattice to an amorphous or nearly amorphous arrangement of the constituents as the pictures usually do not show any diffraction lines. Occasionally a few faint lines are present indicating that the change has been incomplete.

The radioactivity of the minerals at the centers of the radial fracturing varies considerably. In a few cases an indication can be obtained on photographic plates in a week or ten days, sometimes less. Again, exposures of two or three months show no indications of radioactivity.

From the results obtained in examining the central minerals in the laboratory by optical and x-ray methods, together with many observations in the field in eastern United States and Canada, the writer concludes that the fracturing is due chiefly to a substantial increase in volumes of the core mineral while inverting from a crystalline to an amorphous structure with decreasing temperature.

The striking appearance of the fracturing, frequently resembling the poin

of detonation of a miniature charge of high-explosive, often reveals the presence of the small core minerals, (Fig. 2), even when associated with minerals having approximately the same appearance of color and luster.

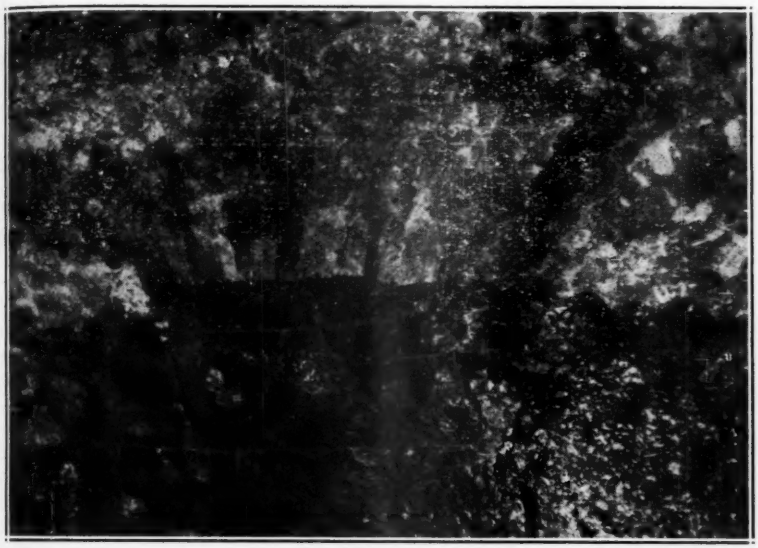


Fig. 2 Radial fracturing in fine-grained quartz about allanite associated with magnetite, lower right. The fracturing revealed the allanite as distinct from the magnetite. From a face in the open pit of the abandoned Hammond Iron Mine, Hammondville, New York.

NATURAL ROCK AND PORTLAND CEMENTS

We have had a number of inquiries relative to the difference between Natural Rock and Portland cements. Our latest inquiry was from a California subscriber who recently visited the old cement mines at Rosendale, N. Y., which formerly was a huge producer of Natural Rock or Rosendale cement. Natural Rock cement was once quite common in the United States and when made from Rosendale limestone it was called Rosendale cement.

Natural Rock cement was made by burning Rosendale or a similar limestone (a silico-aluminous limestone containing from 15 to 40% clayey impurities).

Portland cement, on the other hand, is one made by burning a finely ground artificial mixture of lime, silica, alumina, and iron oxide in certain definite proportions. This mixture must be burned at a higher temperature and the cement is heavier in weight and takes longer to set, but is so vastly stronger than natural cement that the latter is no longer used (or possibly used only in very limited amount). All important concrete structures in the United States—roads, bridges, buildings, etc.—are now made of Portland cement.

Portland cement was first made by Joseph Apsdin, of Leeds, England. It received its name because it hardened under water to a mass resembling the Portland limestone of England.

THE ANCIENT PHARAONIC TURQUOISE MINES OF SINAI

By C. H. BARLOW

For years I have been passing the little town of Abu Zenima and running down the coast to Ras Mohamed at the very tip of Sinai to go deep sea fishing in the Red Sea. Each time I have wanted to run into the Wadi Sidri and up to the turquoise mines, long since abandoned, which were the principal source of turquoise for the ancient pharaohs of Egypt. But fishing is an urge which even a rockhound cannot ignore and a trip to the mines must be exclusively a trip to the mines.

We had to have passes with photographs of each one in the party before we would be permitted to cross into Sinai, although it is Egyptian territory. It is like getting a permit to travel from New York to Jersey City. There is a reason however for the restriction and it is the desert and the smuggles of drugs, arms, and slaves.

In Pharaonic times these mines were worked by the natives of the Sinai peninsula and when they had been left till they had accummulated a store of turquoise and copper, the Pharaohs sent contingents of troops over to dispoil them and bring back their loot.

From the Wadi Sidri a side valley runs into a Y-shaped division and the mines are along the left arm of the Y. In the crotch of the Y there rises a comical hill and this hill faces to all the cardinal points of the compass. Here the Egyptian troops took their stand, building stone barracks and at the very top an open space served as lookout point for their sentry. The base of the hills in which are the turquoise mines is within bow-shot range of the conical hilltop. There are still the remains of the stone huts of the barracks and of the stone stairway leading up to the top. They were mere hovels and not in the impressive manner of Egyptian architecture because they served a temporary purpose only. The mines open about half or two-thirds of the way up the face of the mountains and are of easy access. One morning I went up and down 4 times picture-taking.

The turquoise is found in small nodular deposits in Nubian sandstone veins and the ancients went deep back into the mountain almost on a level with the openings. No shafts were sunk and the only shoring up that was done was by leaving massive pillars of the native rock of the mines. In late times a Scotsman did some excavating for turquoise but he removed some pillars in one of the mines, drilled and set off his blasts. It resulted in disaster because one huge superstratum left the poorly supported roof and came down filling the mine and covering the Nubian sandstone veins completely. Ultimately the miner went bankrupt. His workings still stand to attest the superior methods of the ancients. They worked slowly and silently because they had no gunpowder. They drilled, packed the drillholes with dry hygroscopic wooden wedges, added water and awaited the subsequent swelling of the wood and bursting of the rock-wall. It was slow hand-work but safer than the use of powder. And, judging from the stones in the crown jewels of the Pharaohs, they got out a lot of fine turquoises. With only a chisel and hammer, I succeeded in getting out some good small stones.

Although the mines are on Sinai they are within easy reach of Cairo, being only one day's car travel away, along good desert roads. One group of California scientists wrote of the dangerous and almost inaccessible mountain trip to the turquoise mines whereas there is only the occasional inconvenience of getting bogged down into the sand of the Wadi floor. The in journey is full of interest and wonderful desert scenery the whole distance, after crossing the Suez Canal at Es Shat. Running down the coast one gradually veers farther interior and in an hour from Es Shat comes to the Ein Musa or the Spring of Moses. This is a great elevated pan-like pond surrounded by

palm trees and a few huts. The pond is fed by a warm water spring filled with fish which enjoy a bite of tourist bread.

Leaving Ein Musa, the road runs across flat desert for 100 kilos, where it crosses a Wadi in which there is a brackish water well and a group of palms set in a landscape of wild wind-sculptured rocks and erosion-cut mountains. This Wadi is beautiful beyond words and runs down through water-cut walls, hundreds of feet high, to the Gulf of Suez to the west. In this Wadi, I found an old sulphur mine which tradition says has been used to get sulphur for making gunpowder for the copper mines farther inland. The walls of this sprawling Wadi are glistening white limestone to vari-colored sandstone and it is a most picturesque sight to see a small caravan of camels, sheep, goats and donkeys led by the local Bedouian leaving its cloud of dust as it winds along well-worn trails across the Wastes.

As one leaves this Wadi and proceeds toward Abu Zenima, the next stop on the trip, the scenery gets wilder and more arresting in its beauty cutting through low ranges and entering deep cut black and

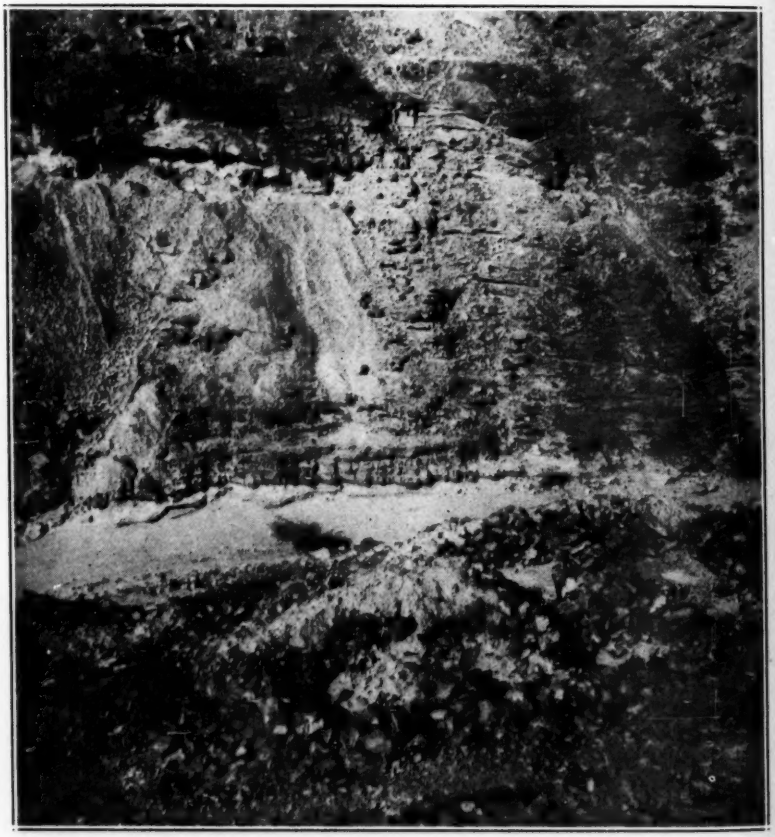
View of the turquoise area showing circular and square remains of ancient stone huts (in foreground) on the top of the conical hill facing the mines across the valley. Tailings dump shows as a white streak.

yellow Wadis to finally emerge directly out to the startling blue of the Gulf. As one nears Abu Zenima the hills get black—a black which is the forecast of the rich manganese deposits in the mines to the north and east of Abu Zenima. The town is only manganese mine personnel and a resthouse erected by the Government for use of its officials. It is pleasantly located some distance out of town on the beach and we usually stop for the night there. It is well appointed with beds, table wear and linen and a caretaker is in attendance—when and if you can find him. The mines are back in the mountains and a narrow gauge rail line dumps great heaps of manganese along the jetty where the ships take it into their holds for export.

The early morning light over the Gulf wakes us to a cold dip in the sea and the resumption of our journey.

All down the coast our cameras were busy storing up the wonders of this coastal range. Such examples of erosion, such mammoth exposure of strata, rift and faulting can only be seen in desert country.

Contrary to common impression there is much rain along this coast in the winter



View of turquoise mine openings with tailings dump. Piles of stones in foreground mark remains of ancient huts on conical hill.

months and erosion is as extensive as it is varied.

The black hills of manganese are set against the white cliffs of limestone and chalk. Red granite mountains rise up into a sky so blue that it looks like pure cobalt. At a minute's notice this scene can change with a noise and fury of roaring thunder, cracking lightning and a deluge of rain, mixed with hail. Then the gentle coastal slope from the mountain foot to the sea becomes a moving mud flow and one keeps to the road and hopes to get into higher ground as soon as possible.

About 40-60 kilometers the road turns toward a cut in the hills which leads into the Wadi Sidri, which we follow for 20 to 30 kilometers to a holy man's grave. This grave marks the turning which leads to the turquoise mines.

Arriving at the mines we had no doubt that we had found them. They were marked by wide low arched openings on the hill side with immense slides of tailings from the mine workings running down from them. Even the entrances were partially blocked by refuse sandstone and limestone from the tunnels to such an extent that I had actually to crawl through into the tunnels.

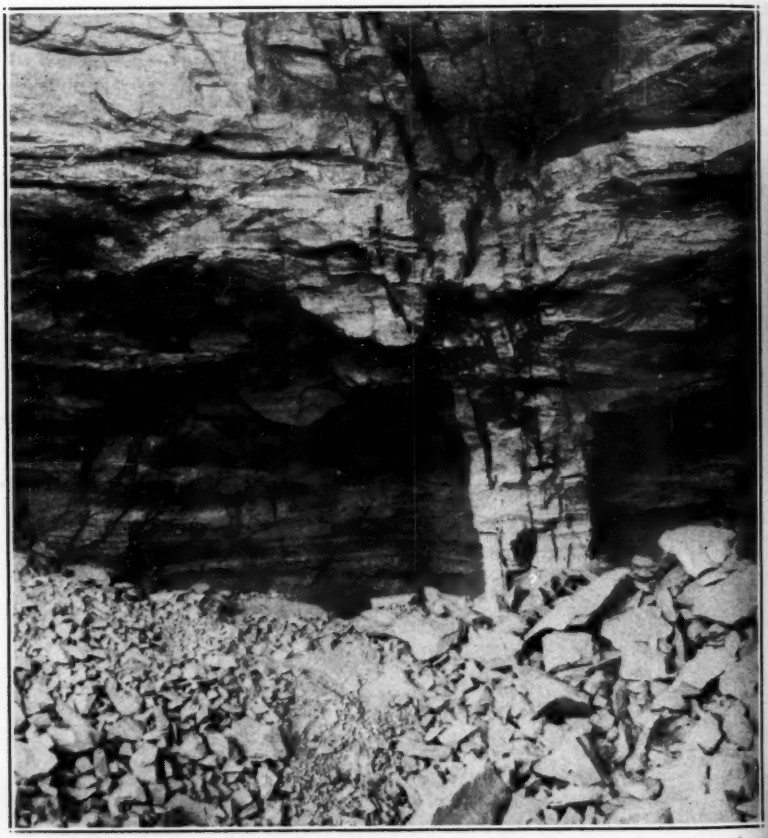
The faces of the tunnels still showed the ancient drill holes some of which were even packed with wood for splitting off the limestone. What working I could do with hammer and chisel brought out much

Close-up view of the turquoise mine openings with tailings dump.

more sweat than it did turquoise, but I did get some and what was more I had the fun of getting it myself.

The turquoise lies in diagonal veins of red Nubian sandstone and one judges of the quality of the lumps by rubbing them on a coarse-grained carborundum knife stone. The better grades of turquoise are equal to the best oriental stones, are dark blue and of porcelain-like consistency.

I am convinced that there are many and even better veins in these hills which only need the attention of a good prospector to uncover.



View in the turquoise mine showing pillar left for roof suppport. Turquoise bearing veins of Nubian sandstone can be seen.

In view of the fact that the locality is of easy access and within only a few hours drive by car from Suez, it is more than likely that the Ministry of Mines and Surveys will ultimately take up their exploitation.

Editor's Note: The turquoise mines of the Sinai Peninsula in Egypt, are said to be the oldest turquoise mines in the world. They were extensively worked by the ancient Egyptians but for the past 3,000 years they have supplied but little turquoise. Most of the turquoise now available is mined in the United States and Persia.

Dr. Barlow, the author of the above interesting article, resided in Cairo, Egypt, for a number of years but is now stationed in Pretoria, South Africa. He has supplied ROCKS AND MINERALS readers with many notes and articles on Egyptian minerals.

We are indebted to him for many nice Egyptian minerals (including a very fine though small Sinai turquoise); he also furnished us with many interesting notes and articles, all of which have been printed in ROCKS AND MINERALS.

View of turquoise mine gallery lighted by candles and kerosene-rag flares.

FIELD TRIP TO PRINCETON UNIVERSITY LABORATORIES

By WILFRED and MARY WELSH

170 Wyckoff Avenue, Ramsey, N. J.

On Saturday, April 21, members of the Newark Mineralogical Society gathered at Princeton University (Princeton, N. J.) for a field trip to the mineralogical laboratories and museum. It was a fine spring afternoon and the campus seemed to celebrate with a profusion of magnolia blossoms and flowering shrubs.

First we were shown several trays of gem minerals, both cut and in the rough, a selection to make any collector's eyes sparkle. In this laboratory, several investigators were examining minute crystals through petrographic microscopes. The crystal was mounted on a universal stage which permits rotating it to any desired position to plot crystallographic axes by optical means.

Next we saw a powerful magnetic separator which segregates a powdered mineral into its magnetic and non-magnetic components. By using a rheostat to control the field strength, two magnetic components of different strength may be sorted.

Both steel and copper, diamond-edge saws were demonstrated for cutting slabs. The sixteen inch saw cut through a slab of cummingtonite with garnet in about four passes, with water used as cooling agent. The lap wheels contain eccentric grooves to give a back-and-forth motion in addition to the rotation, improving the polish. Thin sections, ground to one three-hundredth of a millemeter in thickness, are mounted on slides under a cover glass. By using fixed and movable pieces of polaroid in a slide projector, these thin sections may be shown on a screen. The polarized light serves not only to distinguish the minerals of the petrographic section, but also reveals the type of twinning in crystals, and variable composition within a single crystal.

Another laboratory was devoted to collections of minerals arranged according to localities for the purpose of studying mineral associations.

The X-ray spectrometer was demonstrated as used to analyze the intermolecular planes of a powdered mineral. The graphic patterns thus recorded are filed for comparison with similar patterns from unknown specimens as an aid in identification. If an identification is suspected for other reasons, it may be checked in a very few minutes. Audible clicks representing reenforcing secondary reflections of the X-rays are the verifying clues when the mineral is set at the proper angle in the beam.

In the thermal analyzer, rising temperature is recorded graphically as a clay mineral is decomposed. Each mineral, such as kaolin or montmorillonite, gives off heat to surrounding water, at definite intervals, during thermal decomposition. Graphic patterns of such heat losses serve as standards for comparing and identifying unknown clay minerals.

Metallic minerals are cut, ground and polished, then etched chemically, for study under the petrographic microscope. Dr. Sampson, who supervised our tour of the laboratories, showed us specimens of gold in quartz, and of hematite associated with magnetite.

In the basement laboratory radiation counters were in use checking on the unexpectedly high rate of radiation from sub-oceanic sediments. Here, too, we saw sandstone made from sand by the squeezing action of a hydraulic jack and of sea water compressed by pump. Pressures equivalent to a 5 or 6 miles depth of sediment are obtainable. Use of mercury in lieu of sea water results in visible penetration of the pores. Extent of such porosity might indicate potential oil-carrying capacities of similar strata.

The museum itself displays hundreds of choice minerals—fine crystallizations, gems and ores—from world-wide famous localities.

For an interesting and "different" sort of field trip, this one could not have been surpassed.

TRIP THROUGH OHIO —INDIANA — KENTUCKY

By PETER ZODAC

Editor, Rocks and Minerals

Last October my good friends, Howard and Betty Hamilton, of Vandergrift, Pa., invited me to join them on a trip through Ohio, Indiana and Kentucky. Of course I accepted the invitation as a trip in the company of the Hamiltons is always a most delightful one. Not only are the Hamiltons active mineral collectors, specializing in the type of material that is an asset to a good collection, but they are also a very congenial young couple, full of fun and enthusiasm, and will go out of their way to please you.

We all sit in the front seat, Betty in the middle, and this is a good arrangement. Howard watches the left side of the road, I the right, while Betty looks straight ahead and between the three of us very little escapes our attention. Rock outcrops, mines, quarries, sand and gravel pits, or loose pebbles—we spot them all, if they are to be spotted.

But enough for preliminaries. Let us take up the trip.

The Hamiltons live near Pittsburgh, Pa., in the southwestern portion of the State. To get there in a hurry, I left New York City by TWA plane for Pittsburgh. The plane (Flight 415) left LaGuardia Airport in New York City at 12:10 p.m. (Sat. Oct. 7, 1950), heading southward for Philadelphia, Pa. We had good visibility flying over New York City and I could easily spot Whitestone, Hellgate, Triboro, Queensboro and other bridges across the East River which separate Manhattan and Long Islands; also had a good view of the Brooklyn end of the Brooklyn-Battery Vehicular Tunnel (under the East River) but once in New Jersey we ran into fog and the fog was with us all the way to Philadelphia. We had only 8 passengers to Philadelphia in our 2-motor 36-passenger plane which city was reached 1:20 p.m. When we left Philadelphia, 10 minutes later, I counted 24 passengers.

The flight westward from Philadelphia towards Pittsburgh was outstanding for one event—the pilot or co-pilot would announce over a loudspeaker the progress of the Yankee-Phillies world series baseball game. This was the first time I ever heard a loudspeaker being used in a plane, and I have made many flights. We reached Pittsburgh before the game was over but the Yankees were leading all the way, I believe.

We reached the Pittsburgh airport about 3:00 p.m. and there were my two faithful friends, Howard and Betty, awaiting me. Betty was going to snap my picture leaving the plane but I was the first one out and I rushed toward them so fast she was caught unprepared.

The flight to Pittsburgh was augmented by another incident which could have been most unpleasant—my bags were not on the plane but had been taken off by mistake in Philadelphia. Was I upset! The Hamiltons and I were scheduled to head directly for Ohio, to make Canton that very night and—no bags. "Come back tomorrow, they will be here then, they must have been taken off by mistake in Philadelphia.," were the only words of encouragement given me by the man at the desk. I was disgusted, mad and worried, and the man knew it. "Wait about an hour as another plane is due from Philadelphia and it may have your bags," he then told me after my explosive outburst about our trip being held up.

The plane arrived in due time. I waited anxiously for the bags to be unloaded and there—right on top of the heap—were my two bags! Howard told me later that 3 "officials" of the plane company were out waiting for the bags to be unloaded and all seemed greatly releaved that MY bags had arrived.

We left the airport at 4:10 p.m. heading westward for Ohio in the Hamiltons' car, as per our arrangement. Mileage at the airport was 680.8.

680.8 miles—Pittsburgh airport.

686,5 miles—Pittsburgh city limits.

689.1 miles—Liberty Tubes—vehicular tunnel in Pittsburgh, 200 feet to right. We did not go through it.

691.7 miles—Turn left on U. S. 30 in Pittsburgh.

712.3 miles — Beaver County Line (Penn.).

725.9 miles—West Virginia Line on U. S. 30.

728.9 miles—Chester, W. Va. We stopped here at a little restaurant for our evening meal. While Howard was placing the car in the parking area, I looked the terrain over for pebbles—found a ferruginous quartz pebble nearby, Chester is a small town on the Ohio River.

730.0 miles—Beginning of bridge in Chester over the Ohio River.

730.3 miles—End of bridge in East Liverpool, Ohio.

746.8 miles—Lisbon, Ohio, on U. S. 30. It was now getting dark and so it was useless to look for minerals. We had made no stops to collect as no outcrops, quarries, etc., were to be seen anywhere, since we left Pennsylvania.

781.4 miles—City limits of Canton on U. S. 30.

785.4 miles—Home of Mr. and Mrs. Fred Klink, at 1440 Bryan Avenue, S. W. Canton, where we were to spend the night The Klinks, hearing of our proposed trip, had very cordially invited us to spend a night with them. "If you are anywhere in this neighborhood and don't come to spend a night with us, I will get the sheriff after you," warned Mr. Klink in his letter.

Our stay at the Klinks was a most enjoyable one as they are two very nice and hospitable people. Mr. Klink's mineral collection is a small one but it contains some very nice specimens and we examined each and everyone with great interest. He took us down into his cellar where we could inspect his "loot" of duplicates and he would have loaded us down with minerals, if we had not been careful. He had some very fine native copper from the Michigan copper country and some most interesting North Dakota specimens and I was "persuaded" to accept a few. I don't know what Howard took but believe one or more was native copper, and the coppers were unusually good.

Leaving the cellar with our "loot" we headed for the front room where the Klinks proceeded to show us some pictures taken on trips and what a large number they had! One series of pictures that especially intrigued us were of road markers (state and federal) of every state in the Union which Mr. Klink, himself, took. I never before saw such a series of pictures and they truly were most interesting. It wasn't necessary to ask Mr. Klink what states he was in—the pictures told you.

It was late in the night when we retired but—we had spent a most enjoyable evening with the Klinks.

Sunday, October 8, 1950
(2nd Day of Trip)

It must have been 9:00 a.m. when we left the Klinks to continue our journey. While waiting for Howard and Betty to get ready, I went on a little stroll in the back of the house to see if any pebbles could be found in the terrain—a number were seen and all were dark brown limonite. Soon the Hamiltons were ready and after bidding good bye to our good friends, the Klinks, we resumed our journey on U. S. 30. We saw a good part of Canton, a nice city and the county seat of Stark County, on our way out.

785.4 miles—The Klinks home.

789.7 miles—Genoa, on U. S. 30.

791.2 miles—Massilon, a nice city on Tuscarawas River which we crossed.

800.1 miles—Wayne County line.

814.8 miles—Wooster, on U. S. 30.

820.2 miles—Jefferson, we turn right on U. S. 250.

825.2 miles—New Pittsburg, on U. S. 250.

825.8 miles—A shale outcrop, 50 feet long and 3 feet high, bordered the right edge of road and we stopped to examine it. It was dark gray and thin bedded. Some reddish shale was also present and we noted in it some tiny silvery flakes of muscovite.

826.9 miles—Ashland County line.

831.7 miles—We turn right on Ohio 89.

841.3 miles—We turn right on Ohio 58.

843.8 miles—Sullivan, on Ohio 58.

844.2 miles—B & O R. R. crossing. While waiting for a long freight train to go by, I got out and soon spotted in the nearby terrain a nice dark brown jasper pebble.

846.3 miles—Loraine County line.

856.2 miles — Black River crossed—only about 25 feet wide.

860.3 miles—U. S. 20 crosses.

861.3 miles—Oberlin, on Ohio 58. Here we stopped at the Campus Rest (near Oberlin College). One of the desserts on the menu was "Tin-roof sundae" and out of curiosity I ordered it. It turned out to be vanilla ice cream coated with salted peanuts—what a combination!

867.4 miles—We turn left on Ohio 113.

868.6 miles—South Amherst.

869.7 miles—We turn right on black top road (in South Amherst).

869.9 miles—We park at a sandstone quarry (to left).

This is the world's largest sandstone quarry and being Sunday it was not working. No one seemed to be around, and so we had the quarry all to ourselves. It was our first visit and we all were delighted to see it. (See July-August, 1950, R & M, p. 370, for a description of the quarry which then was stated to be 3090 feet long, 1056 feet wide, and averaged 160 feet deep. Its perimeter (distance around) is more than 1½ miles. We secured some nice specimens of the grayish sandstone (Berea Sandstone) and several specimens of limonite which occurred as dark brown crusts on brownish sandstone. After spending about an hour at this famous quarry, we got into the car and continued onward.

869.9 miles—Sandstone quarry.

870.1 miles—Back in South Amherst where we turn right on Ohio 113.

870.2 miles—Large sign to right "CLEVELAND QUARRIES Berea Sandstone." The quarry was in back of the sign.

875.3 miles—Erie County line.

875.5 miles—Vermilion River crossed (about 100 feet wide).

883.3 miles—Berlin Heights. We turn right on Ohio 61.

887.2 miles—We turn left on U. S. 6.

From here to Sandusky we tried to find a sand beach on Lake Erie but without success. At mileage 894.1 is Rye Beach

Map showing routes taken by the author and the Hamiltons

on Lake Erie. It was small and full of discarded limestone blocks—not a bit of sand was visible but we did get a good view of Lake Erie.

898.7 miles—Sandusky (E. limits) on U. S. 6. We drove down to the lake where a number of excursion boats were docked, hoping one might be going to Put-in-Bay (on an island noted for celestite) but no boats were running. There were a number of dark grayish limestone blocks on one of the piers (Newman's Boat Line) some of which had small grayish masses of calcite in them.

902.1 miles—Sandusky's post office, on U. S. 6.

905.9 miles—Venice. We turn right on Ohio 2.

911.4 miles—Center of long lift bridge over Sandusky Bay.

914.3 miles—We turn right on unnamed road for Catawba Ferry—sign here reads "Put-in-Bay 6 miles."

915.8 miles — Sign here "Entering Catawba Island" but no indications that it is an island—just a long narrow peninsula.

920.5 miles—Catawba Point (end of road which terminates at Catawba Point pier). This is the ferry to Put-in-Bay and it was running but though we arrived at 3:15 p.m., we learned it was much too late in day to make a round trip. The ferry would leave in about an hour or so and would not come back—we would have to spend the night on the island (probably couldn't get a place to stay after we got there) and as it was threatening to rain, we decided to give up the boat ride. We did learn further that round trip charges were $4 per car and $2 per person.

At Catawba Point there was a beautiful pebble beach (several hundred feet long) to the right of the pier and I was soon in my glory examining its minerals. The pebbles were nicely waterworn and varied from tiny up to ½ inch in size (larger also present) and soon I had a canful of the gravel (pebbles of this small size are called gravel). Among the minerals noted (all are quartz) are: basanite (black), chalcedony (grayish), chert (white to brownish), jasper (brownish); also two rocks (granite and limestone). No sand was anywhere visible—I did no digging to see if any was underneath the pebbles.

We headed back for the main road (Ohio 2) but at 920.9 miles we stopped again as a little beach was seen to our left (50 feet away)—we had paid no attention to it on our way in but I wanted some sand from Ohio and this is why we stopped. This, too, turned out to be a pebble beach but by digging a few inches under the pebbles, dark gray fine-grained sand was found. This sand consisted chiefly of quartz (colorless, brownish, etc.) with a little magnetite. The same pebbles as found at the tip of the point were collected and addition the following: opal (cacholong) tiny white pebble, quartz (jasper) red pebble, quartz (milky and smoky pebbles, also group of tiny milky quartz crystals, calcite (tiny colorless pebble), a number of small chips of whitish quartz (possibly chalcedony) coated with pyrolusite dendrites—these chips had many cavities filled with brownish earthy limonite, and in addition to all, tiny lake shells were common. Tiny pieces of broken glass, colorless and blue, were other surprises. Dark gray limestone outcropped on this beach. No sooner had we gotten out of the car at this 2nd beach, then it began to drizzle and continued for the rest of the day. We stayed only a few minutes at this beach—just long enough to scoop up some sand and pebbles, and we were off.

Peach trees bordered both sides of the road through the peninsula. A few cottages were at the point which with the ferry pier made up the little settlement of Catawba Point.

925.6 miles—We turn right on Ohio 2.

928.8 miles—Port Clinton. Portage River is here which we crossed.

934.6 miles—Entrance to Camp Perry on right. It is a huge place with many buildings.

936.5 miles—End of Camp Perry.

951.2 miles — Lucas County line on Ohio 2.

964.6 miles — Toledo — eastern city

limits We headed for the home of C. O. Gettings (2001 Starr Ave., in Toledo) who were expecting us and where we were warmly greeted. We arrived just in time for dinner, which was a most tasty one, after which we examined the mineral collection of the Gettings. We soon learned that the whole family collects—Mr. and Mrs. Gettings and their son and daughter; indeed their daughter Carol has made some remarkably nice finds. Two specimens in the collection intrigued me very much—1 x 1 inch loose sulphur crystal found in a limestone quarry at Lima, Ohio; and a group of very light blue celestite crystals from West Mill Grove, Ohio.

Part of the collection was in the house but most of it was in Mr. Gettings gas station (next door) in which one large room was just lined with box after box and all full of nice minerals. Mr. Gettings collection of celestites and fluorites from the famous limestone quarry at Clay Center, Ohio, is one of the finest in the country.

It must have been at least 10 p.m. when we broke away from the spell of examining minerals and headed for the Cherry Street Tourist Home (3009 Cherry St.) in Toledo where we were to spend the night. The Gettings drove us there and we saw much of the city at night, including the new railroad station.

Every now and then it had been raining quite heavily and we prayed for nice weather for the next day because—the Gettings were going to take us to a NEW quarry, a big surprise!

Monday, October 9, 1950
(3rd Day of Trip)

Either we did not pray hard enough or we must have forgotten something important in our prayers for the day turned out to be a most miserable one. But the Gettings, God bless them, made ready for the trip as if it was the most pleasant day imaginable. Mrs. Gettings was going and Carol just begged to go but—she had to go to school.

I went in the Gettings car, the Hamiltons following. It was such a miserable day I made no attempt to take the mileage or make any notes, as we twisted and turned from one road to another and at times it was most difficult to spot the route numbers. One thing I knew, we were heading for a limestone quarry S. W. of Bowling Green, in Woods County. This quarry was producing some beautiful golden-yellow calcite crystals (Mr. Gettings had told us before we started) and we were most anxious to collect some. We arrived at the quarry in due time and in a heavy downpour. Perhaps I can do no better than to quote the paragraphs which appeared in the Nov.-Dec., 1950, R & M, p. 601:

"The above limestone quarry near Bowling Green was visited on Monday, October 9th, with Mr. and Mrs. Howard V. Hamilton, of Vandergrift, Pa., and guided by Mr. and Mrs. Gettings. It was raining lightly when we left Toledo but by the time the quarry was reached it was pouring and how it did come down! There we all sat in the car in the middle of the quarry, hoping and praying for the rain to stop (none of us had raincoats). Golden calcites were all around us, some of huge size. More than once we tried opening the door to dash out for a specimen, but the rain drove us back. Finally in desperation, after waiting for over an hour, we had to get out, rain or no rain. I had a bright idea. As I dashed out of the car, I grabbed a large specimen which looked good and headed for the nearby steam shovel under which I crouched, in perfect security from the rain and where I calmly broke up the mass securing some good specimens. The others may have secured far better specimens than mine but I was practically dry on returning to the car 10 minutes later while they were all thoroughly wet."

Aside from the calcite, this quarry produced some dark grayish barite crystals that fluoresced and phosphoresced light greenish under the Mineralight; large masses of marcasite, and in addition Mr. Gettings has found chrysocolla, dolomite, fluorite, malachite, pyrite and sphalerite.

Just as we were going to press, a letter dated July 12, 1951, arrived from Mr. Gettings giving us more information on

the above quarry—Pugh quarry is its name. Mr. Gettings and his son paid the quarry another visit recently.

Part of the letter reads:

"On this trip my son, Duane, found the finest specimen of black calcite. These crystals were ¾" and well formed. They had a small center of clear calcite.

"On this trip we found also one pocket with several calcite crystals 5 inches long covered with barite."

Leaving the quarry, I was now in the Hamiltons' car, we headed back towards Toledo but going a few miles only, we parted with the Gettings when we hit U. S. 6—they turned to the right while we turned to the left—with a honking of horns and the waving of hands. We were very sorry to see them go as they were unusually nice and friendly.

1010.0 miles—Limestone quarry.

1018.1 miles—We turn left on U. S. 6 and part with the Gettings.

1023.2 miles — Henry County line (Henry-Wood road crosses here).

1036.3 miles—Bridge over Maumee River in Napoleon (on U. S. 6) which is the county seat of Henry County. We stopped here for lunch. We turned left at the courthouse on U. S. 24.

1046.7 miles—Defiance County line.

1051.0 miles—Nice view of Maumee River (100 feet to left) which is 800 feet or more wide.

1054.1 miles—Defiance, on U. S. 24. We went past the site of old Fort Defiance built by Gen. Anthony Wayne.

1054.7 miles—Wabash R. R. overhead. We stopped here for a few minutes, perhaps for the Hamiltons to see a train go by as they are intensely interested in railroading. I got out to look over the terrain and found a small brownish fossiliferous chert pebble.

1065.6 miles—Paulding County line. Ohio 127 goes to right here.

1076.6 miles—Antwerp, Ohio on U. S. 24.

1083.4 miles—Indiana 101 crosses here (in Indiana). No state line sign seen so could not get its mileage.

1085.0 miles—Maumee River to right. Rained slackened here, almost stopped.

1094.5 miles — New Haven, Ind. Parked at R. R. crossing for a few minutes. Saw a crack train of the N. Y. Chicago and St. Louis R. R. (Nickel Plate) go by. Rain stopped by now and for good. I found some gray chert pebbles near here.

1099.6 miles—Fort Wayne.

1113.5 miles—Whitley County line.

1114.2 miles—Huntington County line on U. S. 24.

1125.9 miles—Clay bank to right (100 feet long and 25 feet high). We stopped to examine it but found only gray chert pebbles.

1126.2 miles—Huntington on U. S. 24 and county seat of Huntington County. Here we took Indiana 9 and 39 for Marion.

1129.1 miles—Wabash River crossed (about 100 feet wide).

1145.1 miles—Grant County line.

1150.4 miles — Mississenewa River (200 feet wide).

1152.0 miles—Marion, Grant Co., on Ind. 9 and 39. Although it was still early, we decided to spend the night in Marion so that we could call on Mr. Verne Simons, at 3641 So. Nebraska St., in the city. We registered at Spencer's Tourist Court, Spencer Avenue and By-Pass, in Marion. The driveways around the court were all covered with nice broken up chert which was of such good quality as to make me wonder where it came from (Mr. Simons later told me he believes this and other crushed stone used in the city comes from the Pipe Creek quarry about 5 miles due west from Marion.)

We contacted the Simons home about 7 p.m.—Mrs. Simons answered the phone, was most delighted to hear we were in the city and cordially invited us to call. They live some distance from the court but we found the house without trouble and Mrs. Simons was awaiting us—Mr. Simons would be in shortly. We had a delightful visit and enjoyed his small but very nice collection. He had a number of good duplicates, especially from western states, and invited us to help ourselves to some of them, and we did.

It was 10:45 p.m. when we left them,

and 11 when we reached the tourist house.

Tuesday, October 10, 1950
(4th Day of Trip)

1163.2 miles—Tourist house in Marion (8:10 a.m.)

1177.9 miles—Madison County line on Ind. 37.

1199.9 miles—White River crossed (100 feet wide).

1224.0 miles — Indianapolis (10:05 a.m.) city limits. We follow White River through the city and at mileage 1226.0 we cross it on Ind. 37.

1229.0 miles—State Capitol in Indianapolis. We stopped in the city to visit the capitol and hoping to find some minerals on display—a few were in the basement but they were very poor. We called up Walter Reeves in Greencastle, who was delighted to hear we were nearby and cordially invited us to visit him.

Our car was parked in the parking lot across the street from the capitol and on going back to it I noticed a red pebble in the crushed stone along the edge of the lot. The pebble turned out to be a nice red chalcedony. The chalcedony may have been brought in with the crushed limestone or it may have been thrown away by a collector who may have parked there at one time.

We took U. S. 40 out of Indianapolis, heading westward for Greencastle; crossed White River (about 200 feet wide) in the city, and at mileage 1232.3 we turned right on U. S. 36.

1238.1 miles—Hendricks County line.

1248.2 miles—Danville on U. S. 36 and county seat of Hendricks County. We ate lunch here, after which we took a stroll through the little town. Canterbury College is located here but we did not see it. Somewhere near the courthouse I picked up a little black pebble that was full of tiny smoky gray labradorite.

1257.5 miles—Putnam County line.

1264.0 miles—Bainbridge.

1268.2 miles—We turn left on Ind. 43.

1272.0 miles—We turn left in Brick Chapel.

1273.6 miles—We turn right in Brick Chapel.

1274.0 miles—Walter Reeves' home (1st house on right). Mr. and Mrs. Reeves were at home and greeted us warmly. After a quick examination of his collection—housed in 5 cases—we were off on a trip to Big Walnut Creek for geodes with Mr. Reeves as guide. Big Walnut Creek is 5 miles north of Greencastle and in the limestone bordering it, Mr. Reeves' son had found some very nice geodes (see Sept.-Oct., 1950, R & M p. 497.)

On the way to the locality we passed Dry Branch and close to the 1-track Monon R. R., Mr. Reeves pointed out a spot where he had found some nice brown petrified wood. (The water was high in the brook so we did not stop—have to wait for low water). I made no effort to take the mileage as we went over unnamed dirt roads which twisted and turned through the countryside. We stopped and parked at the other end of a red iron bridge spanning a 100-foot wide creek. This was Pinhook Bridge over Big Walnut Creek, Mr. Reeves told me, adding that Big and Little Walnut Creeks make the Eel River. Along the left hand side of Big Walnut Creek, to the right of and beginning at the bridge, and along the water's edge, is where we soon found geodes, averaging from 1 x 1 up to 3 x 3 inches in size. The small ones were found imbedded in a very dark limestone which outcropped along the edge of the creek; the larger geodes were found imbedded in loose blocks of limestone in the creek. The geodes were lined with tiny but lustrous quartz crystals, mostly milky but some stained brown by iron. Some of the iron-stained quartz was very beautiful as they had a greenish iridescent sheen. Tiny brownish crystals of dolomite with milky quartz crystals were also found in the geodes. A nice grayish mass of chert was found loose in the creek. Some of the quartz geodes fluoresce creamy-yellow under the Mineralight. On previous trips to the locality Mr. Reeves had found ankerite (brownish crystals); barite (platy grayish crystals); kaolin (white earthy coatings on quartz, etc.); pyrite (tiny striated cubes); and sphalerite (black-brown crystals)—all in geodes.

We retraced our route back to the petrified wood locality in Dry Branch (did not stop) but on the other side of the railroad we did stop to park our car. We then followed the railroad (to the right) for about a mile, walking all the way. The single-track railroad was ballasted with freshly broken limestone which Mr. Reeves informed us came from the railroad's quarry at Monon and that the stone is used for railroad fill, adding that some nice pyrites are often found in the rock. I kept my eyes open for pyrite and soon spotted some nice specimens consisting of tiny but lustrous crystals (pyritohedrons) on dark gray limestone. (Monon is in White County, about 125 miles north of Greencastle).

Just a short distance from where we parked our car, we crossed Dry Branch (1st bridge); at the 2nd bridge, about a mile further, we were to find some nice geodes. The walk was not too strenuous and we finally reached the 2nd bridge, also over Dry Branch. Unfortunately we did not find anything good as a new bridge had been erected recently and the debris from the old one covered the brook bed for some distance. The only mineral of interest found here by me was a dark blue (almost black) stain of vivianite on a heavily iron-stained limestone.

We then started to follow Dry Branch down, towards our parked car, which proved to be a most interesting even though a long hike. The creek varied from 10 to 50 feet and more in width but due to many large rocks in it we were able to cross it every now and then. And did we find geodes! There were so many in the brook (some loose like pebbles but most were imbedded in loose blocks of limestone) that we soon became choosey —picking out only the good ones and all were lined with nice milky quartz. There were other minerals found in the creek—none of them in geodes—and they were:

CALCITE: colorless cleavable masses; also pale brownish crystalline that fluoresced creamy-yellow under the Mineralight.

LIMONITE: small brown pebble.

QUARTZ: (basanite): small black pebble.

QUARTZ (chalcedony): small grayish botryoidal mass.

QUARTZ (chert): brownish, also grayish masses.

QUARTZ (jasper): small brownish pebbles.

SPHALERITE: nice ½ inch dark green crystal in cleavable white calcite.

Other material found in Dry Branch were:

BASALT: black amydaloidal pebble with amygdules filled with peach-red masses that may be erythrite—someday I may find the time to test it carefully.

FOSSIL: loose small grayish coral.

LIMESTONE: Not far from the 2nd bridge, a small outcrop of grayish limestone bordered the left edge of the creek. A piece broken off the ledge showed some small but nice crinoid fossils.

A 1 inch nicely banded grayish limestone pebble was found—it contained over 30 bands!

SAND (creek): dark grayish fine grained sand consisting chiefly of quartz (colorless, whitish, brownish) with a little black magnetite.

Another item seen in the creek but NOT collected were loose concrete masses, some quite large, that must have come from the foundations of the old bridge. These masses must have been washed down (some were ½ mile away from the bridge) when the creek was high and in a turbulent state.

Finally we reached the 1st bridge where we climbed up to the railroad and headed for our nearby car—tired but very happy.

This finished collecting for the day and we headed back for the Reeves home where we inspected again his fine mineral collection. Mr. Reeves had many nice duplicates (and especially geodes) and he insisted on filling our arms with choice minerals. One specimen, thus obtained, which especially pleased me was a nice brown limb section of petrified wood from the locality in Dry Branch which we saw twice but never stopped. And before we had a chance to leave, Mrs. Reeves, who had remained at home while

we were out collecting, surprised us most pleasantly with an invitation to stay for dinner. What a nice dinner it was too, and did we eat!

It was at least 8:30 p.m. when we left our good friends and headed for the little city of Greencastle (the Reeves live a few miles from it) where we planned to spend the night. On the northern outskirts of Greencastle we noticed Hedges Tourist Home (on our right) but hoping to find a place in the town itself we kept on going but, seeing nothing once we got there, we turned around and went back to the Hedges. The Hedges Tourist Home turned out to be a very nice place.

Wednesday, October 11, 1950
(5th Day of Trip)

1286.0 miles—Hedges Tourist Home on Ind. 43.

1287.0 miles—Eel River crossed.

1288.0 miles—Greencastle R. R. Sta. to right.

We stopped for breakfast in Greencastle, the county seat of Putnam County and the home of De Pauw University (did not see it). We took Ind. 43 out of town).

1293.0 miles—U. S. 40 crosses. We turned right on it as Ind. 43 was closed and we had to detour.

1300.0 miles—Manhattan.

1304.7 miles—Clay County line.

1309.5 miles—Brazil on U. S. 40 and county seat of Clay County. Many soft coal mines are around Brazil.

1311.0 miles—We turn left on Ind. 59.

1314.2 miles—Coal mine (stripping) to right and first one seen.

1315.0 miles—Coal mine (stripping) to right. We stopped at this one and not being worked we had it all to ourselves. I collected here a nice lustrous black mass of soft coal (bituminous). This mine is near the little hamlet of Prairie in Clay County. Coal strippings are on both sides of the road for the next ½ mile or so.

When coal lies fairly close to the surface, and especially in a flat area, the surface overburden is often removed by steam shovel or other devices, exposing the coal which can then be removed by quarrying methods. Such a coal mine is called a stripping.

1320.2 miles—Ashboro.

1321.0 miles—Big coal stripping off to right.

1321.2 miles—We turn right on Ind. 46.

1321.4 miles—Coal stripping both sides of road.

1322.0 miles—Coal stripping to left of road and working. This is the only mine seen that was in operation; the others are apparently abandoned.

1326.0 miles—Bowling Green.

1330.8 miles—Owen County line.

1339.9 miles—Clayton Winders limestone quarry, 300 feet to left, and plainly visible. We stopped to examine it (not working) but all we could find were black dendrites of pyrolusite on gray limestone. The quarry was about 300 feet in diameter with walls 25 feet high.

1341.8 miles—Spencer (County seat of Owen County). We stopped for gas and here I learned that the Winders quarry had been worked for crushed stone but is now abandoned as there is too much dirt in it—the quarry looked good to me.

1342.9 miles—White River crossed again (300 feet wide).

1345.0 miles—McCormick Creek State Park, on Ind. 46.

1347.0 miles—Monroe County line.

1352.0 miles—Ellettsville on Ind. 46.

1357.7 miles—Limestone quarry (left) operated by the Texas Quarries, Inc. (Indiana Branch—Bloomington, Ind.)

The quarry was working and we stopped to examine it, after Howard got permission on stopping in the office. This was the famous Indiana oolitic limestone, gray in color, that is used as a building stone and many huge quarried blocks were all around us. The quarry was about 500 feet square in area and 25 feet deep on all sides. Of course we collected some nice specimens of this unique stone.

1358.2 miles—Arlington line.

1359.1 miles—Bloomington line, city limits.

1360.2 miles — Courthouse (left) in Bloomington which is the county seat of Monroe County and the home of Indiana University. We stopped for lunch and then took Ind. 37 out of the city.

1371.0 miles—Here is a 300 foot exposure of a fossiliferous gray limestone bordering both sides of the road. Of course we stopped to examine it and it was a good thing we did for the rock was just loaded with geodes. Many geodes could be seen imbedded in the limestone, which averaged about 25 feet in height, but we got our best specimens in the ditches alongside of the road where the geodes were loose and in all sizes from 1 x 1 up to 6 x 6 inches. All were lined with quartz crystals (transparent rock crystals or whitish milky quartz crystals). About 300 feet from the end of the limestone outcrop the road goes over the single track Monon R. R. (we saw a train go by while collecting). The loose geodes in the ditch looked like claystone concretions to me.

1371.5 miles — Harrodsburg, Monroe Co., (very small) on Ind. 37.

1373.2 miles—Lawrence County line.

1379.4 miles—Indiana Limestone Co., quarries (oolitic limestone). Both side of road. Quarries large and in operation (Walsh quarry on right). We did not stop.

1379.9 miles—Oolite, on Ind. 37.

1382.6 miles—Bedford, very nice little city.

1397.8 miles—Orange County line.

1398.7 miles—Orleans, where we stopped for a soda. Found a small pebble here of grayish oolitic limestone.

1406.7 miles—Paoli, Orange County. We turn right on U. S. 150.

1407.0 miles—Paoli R. R. station (right).

1409.1 miles—Calcar quarry, 75 feet left of U. S. 150.

This is a large oolitic limestone quarry about 1,000 feet long, 300 feet wide, with walls 100 feet high. It was working and we got permission from the superintendent to enter—we learned from him that the rock was used for crushed stone. No minerals were seen but we collected some nice specimens of the gray oolitic limestone.

1418.1 miles — Washington County line.

1427.8 miles—Harrison County line.

1434.7 miles—Floyd County line.

1440.3 miles—Galena, Floyd County, on U. S. 150. This is a small community and its name intrigued me as it might indicate that lead mining may have been carried out in the past. We stopped at a small store where 2 or 3 "oldtimers" were sitting out in front and I asked of them about the origin of the name. Not one could tell me—not one ever heard of lead or any other metal or mineral being found in the area. "All we have is clay," said one, and the others agreed with him.

Somewhere in southern Indiana we noticed two large tobacco sheds—so tobacco evidently is grown in the state.

1444.5 miles—Floyd Knobs on U. S. 150.

This is a small community but I had heard that there was a limestone quarry in it or near it where nice compact white gypsum and beautiful colorless selenite crystals had been found. We stopped at a gas station where the attendant told me he had never heard of a quarry in the area, and he had lived there many years.

Soon after leaving Floyd Knobs, U. S. 150 began to go downhill. At mileage 1445.6 we had a good view of the city of New Albany, far below us. At this point, (1445.6 miles) there is an excellent outcrop of gray sandstone (I believe it is sandstone—I knocked off a piece in a hurry to examine it later but it could not be found when this article was being prepared)—that is 300 feet long and 50 feet high.

1447.8 miles—New Albany, Ind., on U. S. 150 and on the Ohio River.

1450.5 miles—Beginning of toll bridge over Ohio River (toll 15c).

1451.2 miles—End of bridge in Louisville, Ky. A Southern R. R. freight train was keeping abreast of us (to the left on the bridge) and the race ended in a tie.

We would have spent the night in Louisville, had we seen a nice tourist house along the way, but as none was seen we just kept on. We stopped in St. Matthews, on the eastern outskirts of Louisville, where we saw a nice tourist

house, but no one seemed to be home, and so we kept on.

1474.1 miles—Shelby County line, Ky., on U. S. 60 which we had picked up in Louisville.

1483.9 miles — Shelbyville, Ky., on U. S. 60. We spent the night at the C. S. Wills Tourist House where we got nice rooms. Shelbyville is a nice little town, pop. 4400 according to a posted sign, and we enjoyed ourselves very much.

Thursday, October 12, 1950
(6th Day of Trip)

1485.6 miles—Shelbyville, Ky. (tourist house).

1491.3 miles—A 300 foot limestone exposure (8 feet high) borders both sides of the road (U. S. 60). We stopped to examine it and found calcite (small white crystalline masses); chert (gray masses); and fossils (nice brachiopods on dark gray limestone).

1492.0 miles—Clay Village, Shelby County.

1498.4 miles—Franklin County line.

1506.3 miles—Western outskirts of Frankfort. Good view from here of the city below.

1507.2 miles—State Capitol in Frankfort. A beautiful building which we stopper to inspect and also to examine minerals, if any were on exhibit—unfortunately no minerals were in the building, we were told.

In Frankfort (on the Kentucky River) we noticed two large quarries on the northern outskirts of the city but though we tried to visit them, we just couldn't find the right road and so gave it up in disgust. We tried especially to reach the quarry on our right, as our journey was to continue in that direction—this was the penitentiary quarry (told us in the Capitol) and so it may be more or less hidden from view as one approaches it.

The Kentucky River in Frankfort is apparently a small stream as I do not remember seeing it, though I do recall crossing small bridges.

1510.4 miles—Small limestone quarry (50 feet diameter) on the eastern outskirts of Frankfort on Ky. 35. We stopped to examine it but no minerals were seen—just dark gray limestone.

1521.8 miles—Owen County line on Ky. 35.

1537.5 miles—We turn right on Ky. 22 in Owenton.

1546.7 miles—Grant County line on Ky. 22.

1546.8 miles—Sign here 'Enter Eastern Time Zone."

1558.0 miles—Dry Ridge (pop. 250) on Ky. 22. Stopped for lunch and gas. In the terrain near the gas station I found a small red granite pebble containing greenish epidote. In Dry Ridge we turned left on U. S. 25. Southern R. R. (2 tracks and 50 feet to right of road) paral'els U. S. 25 for a few miles out of Dry Ridge.

1571.5 miles—Boone County line on U. S. 25.

1590.0 miles—Covington, Ky., on U. S. 25. This city, on the southern bank of the Ohio River, is opposite Cincinnati. Stopped here for gas. Howard also called up E. H. Sarles in Norwood, Ohio, to inquire if he would be in tonight as we would like to pay him a visit—he received a most favorable answer.

1591.8 miles—Beginning C & O bridge—built in 1888—over Ohio River.

1592.1 miles—State line on bridge.

1592.4 miles—End of bridge in Cincinnati, Ohio.

1597.0 miles—University of Cincinnati in the city which we visited in order to examine its mineral collection. The University of Cincinnati on College Hill consists of many nice red buildings. A good collection of minerals and fossils are on exhibit in the Geological Museum.

1603.9 miles—Roselawn Tourist Court, 7661 Reading Road, on the northern outskirts of Cincinnati. (on U. S. 25 and 42). Here we got nice cabins (3 and 4) for the night—mine was No. 3. Being early in the evening I strolled over the terrain looking for pebbles—nothing to be seen but limestone though one had a small buff colored vein of calcite. (The court has its own restaurant—very nice and reasonable).

At night we visited Mr. E. H. Sarles at his home (2026 Elm Avenue., Nor-

wood 12, Ohio) in a suburb of Cincinnati. And what a pleasant surprise was in store for us. Not only did we have the pleasure of examining Mr. Sarles fine mineral collection, but collectors in groups of 2, 3 and 4 started coming in until the house was almost bulging with humanity. These collectors were members of the Cincinnati Mineral Society—the whole club must have been present. It was a most enjoyable evening as the collectors were all very friendly—and they came just to meet us! In the group were the four Grossmans from Batesville, Ind.—mother, father, son (Roy) and daughter (Rosalie). Roy has been a subscriber for R & M for many years; his little sister, Rosalie, is the sweetest girl imaginable. A high light of the evening was the showing of many fluorescent minerals by Mr. Sarles. It was with much regret that we had to leave—minerals parties can't last forever—but we were the last to go. It was truly a delightful evening!

Friday, October 13, 1950
(7th Day of Trip)

1614.1 miles—Rose!awn Tourist Court, Cincinnati.

We headed northward out of the city and in Springdale we got on U. S. 127 which we followed.

1629.4 miles—Fisher Body Co. —huge but nice plant.

1630.1 miles — Hamilton. Here we turned right on Ohio 4.

Hamilton is a city I will remember for a long time because when I flew over it, Sat., October 25, 1947, I saw its name painted in large white letters on the top of some building—the first and only such sign I ever saw from the air and I have made many flights.

1645.5 miles—Middletown. We turned right on Ohio 73.

1648.0 miles — Great Miami River crossed—about 200 feet wide.

1651.0 miles — Montgomery County line.

1664.9 miles—Dayton, here we again get on Ohio 4.

1667.0 miles — Great Miami River (about 500 feet wide) crossed again and in Dayton.

1674.0 miles—Wright Field to right on Ohio 4. Huge, nice and fenced in.

1674.4 miles—Greene County line.

1676.0 miles—Patterson Field (left). We saw two army planes drop paratroopers and saw chutes open.

1682.3 miles—Clark County line on Ohio 4.

1689.4 miles—Springfield, on Ohio 4.

We inquired for directions on reaching James W. Riley (Dialton Road, Rt. 2, Springfield) but got lost in trying to find his house. Finally we reached the place, way out in the country, but no one was in and we had to turn around and come back. It was a very nice place with lots of "rocks" all around—geodes, jaspers, large amount of Flint Ridge material, etc. While I was on the front porch ringing the bell, I suddenly heard a loud snap under my feet which startled me—no cause for alarm however—I had stepped on a large walking stick (insect) and crushed it.

Mr. Riley had been on a long western trip, I knew, but was due home a day or so before our arrival. His phone had been discontinued so I could not contact him from Springfield, however we made the trip in the hope he might be home. Later I learned that at the time of our visit he was still out west. We returned to Springfield and continued our journey eastward.

1705.0 miles—Mr. Riley's home.

1711.7 miles—Lawrenceville, on Ohio 70.

1715.6 miles—Mad River crossed (100 feet wide).

1716.4 miles—Springfield again. We turn left on U. S 40.

1733.4 mi'es—Madison County line.

1749.7 miles—Franklin County line.

1757.6 miles—Columbus.

1762.0 miles—Scioto River (about 1,000 feet wide) in Columbus. We parked near the river and then visited the nearby State Building and also the State Capitol (a few blocks away). No minerals seen in the Capitol.

In the Capitol we inquired direction for reaching Ohio State University (in the city) and soon we were heading for it (4 miles northward). The University con-

sists of a large group of nice gray and red buildings. Here we visited the Geological Museum where many nice minerals were on display. We also visited the Ohio Geological Survey (in another building) where we met Mr. John H. Melvin, the State Geologist, and saw more minerals and many fossils.

1766.0 miles—Ohio State University.

1772.2 miles—We turn right on U. S. 40 in Columbus.

1773.5 miles—Capitol University, red and gray buildings. We did not stop.

1781.9 miles—Licking County line.

1808.8 miles—oil field here—6 wells drilling on both sides of road.

1810.1 miles—Brownsville on U. S. 40. We turn left on Ohio 668 for Flint Ridge—3 miles away.

1811.0 miles—Two oil wells (right) on Ohio 668.

1813.1 miles—Flint Ridge State Park (south edge of park) on Ohio 668.

Here along the right edge of road and in the gutters were numerous outcrops of mottled reddish, grayish, and brownish chert and many beautiful specimens were collected. This chert takes a beautiful polish to make attractive specimens and ornaments. Other minerals found here were rock crystals (coarse drusy crystals on chert), chalcedony (pale bluish gray, banded on chert), limonite (small earthy masses in cavities in chert), and pyrolusite (small black dendrites on chert).

1813.1 miles—Flint Ridge State Park. We turn around and go back.

1816.1 miles—Brownsville, we turn left on U. S. 40.

1819.6 miles—Muskingum County line.

1828.9 miles—Zanesville. We crossed the Muskingum River in Zanesville over a Y-shaped bridge. A sign on bridge read "Oldest 'Y' bridge in U. S."

1830.5 miles—Courthouse (left) in Zanesville. U. S. 22 joins U. S. 40 here.

1846.9 miles—New Concord on U. S. 22 and 40. Here we spent the night, registering at the Silent Rest Tourist House (J. L. Evilsizer) 112 E. Main St.

In the evening Howard and I called on Robert Mitchell, instructor in geology at Muskingum College (we saw the entrance as we entered New Concord) and had a nice visit with him. Unfortunately Mr. Mitchell had no collection at his home but he did have a very nice dark brown petrified wood, 4 x 6 inches in size and weighing exactly 3 lbs., which he gave me. This handsome specimen came from a brook bed just ½ mile east of the Muskingum-Guernsey County line which we would visit next morning.

Saturday, October 14, 1950
(8th Day of Trip)

1846.9 miles—Silent Rest Tourist House in New Concord.

1847.0 miles—Guernsey County line.

1847.5 miles—High tension line crosses overhead. Here a dirt road leads off to the left and 300 feet in is a 5-foot brook. This is the petrified wood locality told me by Mr. Mitchell, but search as I would, no petrified wood could be found. Though the brook was rocky, nothing of interest could be found except a milky quartz pebble and a thin slab of brown jaspery-chert containing a number of fossils ("sea lilies?")

1854.1 miles—R. R. Tunnel (B & O) to right. The tunnel appeared to be a short one, about 300 feet long. The road, U. S. 22 and 40, goes through a rock cut. We did not stop.

1854.2 miles—Cambridge (county seat of Guernsey County). U. S. 22 swings to left here, but we continued on U. S. 40.

1859.0 miles—Old coal stripping area, both sides of road.

1869.4 miles—Middlebourne, on U. S. 40.

1878.0 miles—Coal mine (soft coal), 300 feet to right. Small shaft mine and in operation.

1881.8 miles—Coal mine (soft coal), 200 feet to right. Tunnel mine and in operation.

1893.4 miles—St. Clairsville, on U. S. 40. Here on the main street are the offices of the Hanna Coal Co., operators of nearby Willow Grove Mine. I stopped at the office to ask permission for visiting the mine and it was readily granted, directions were given me also.

1896.2 miles—Willow Grove coal mine. Here I was treated to many plea-

sant surprises. An old mining engineer that I am, with some years experiences in the hard coal (anthracite) mines of Pennsylvania, I found no waste dump—not even the sign of one—at the shaft—just some nice clean buildings with well-kept surroundings; the trip down the shaft was made in a fancy enclosed and illuminated elevator (just like in a modern office building); and the passageways in the mine were not only high, wide, clean and well lighted, but they had board walks in them; and our guide was the most pleasant miner I ever met. If I should ever tell the hard coal miners what I saw at St. Clairsville, they would surely laugh at me—"No such conditions exist"—unless of course the anthracite mines have greatly improved their workings since I left them in 1918.

I collected a nice lustrous mass of bituminous coal while down in the mine. Incidentally Howard was with me on the trip into the mine, Betty did not want to go. (It was Mr. Mitchell of New Concord who told us that we might get permission to visit the mine—our grateful thanks are extended to him).

1896.2 miles — Willow Grove coal mine.

1896.3 miles—We turned left under R. R. trestle, on Ohio 9.

1898.2 miles—We turned right in St. Clairsville on U. S. 40.

1898.3 miles—Courthouse (left). St. Clairsville is the county seat of Belmont County. Hanna Coal Co., offices are opposite the courthouse.

1902.0 miles—Coal mine to left. Believe this is the tunnel entrance to the Willow Grove mine which we had visited.

1904.2 miles—Lansing, on U. S. 40. Coal mine here but we did not stop.

1908.0 miles—Bridgeport, Ohio, on the Ohio River.

1908.2 miles—Beginning of toll bridge over Ohio River on U. S. 40. Wheeling, W. Va., is on opposite side of the river but a large island (Wheeling Island) is between the two cities. The toll house is on Wheeling Island (toll 15c). The other bridge is free.

1908.6 miles—Beginning of longer bridge.

1909.0 miles—End of bridge in Wheeling, W. Va.

1915.9 miles—Triadelphia, W. Va., on U. S. 40.

1918.1 miles—We stopped at a large limestone outcrop bordering the left side of road (U. S. 40). The rock was about 200 feet long and 75 feet high. No minerals were seen in it—just massive gray limestone. About 100 feet to right is a 50 foot wide creek known as Gashell Run. I looked in vain for something good among its many boulders and pebbles—the best seen was a gray mass of chert. A canful of gravel and a canful of sand were taken to be examined later—both turned out to be dull gray, unattractive material and both consisting chiefly of limestone, shale, sandstone, quartz, etc. Note—coal mines (bituminous) are in the area.

1924.4 miles—Pennsylvania state line on U. S. 40.

1939.9 miles—Washington, on U. S. 40. From here we headed northeasterly for Vandergrift, over many roads.

2011.3 miles—Vandergrift, Pa., the hometown of the Hamiltons, where we arrived at 187A Franklin Ave., at 4:50 p.m. I spent the rest of the day inspecting Howard's very fine mineral collection.

Sunday, October 15, 1950
(9th Day of Trip)

This was to be our last day collecting. Howard had two localities reserved for me. The first was Kelly's Station, in Armstrong County, Pa., where many nice pebbles of jasper and other minerals could be found. Don't ask me how we got there. There were so many twists and turns that only Howard knew which ones to take, and they seemed to be all unmarked roads. The speedometer registered exactly 12 miles from the house to where we parked at Kelly's Station. And Kelly's Station seemed to consist of only a small railroad freight station—nothing more. About 2,000 feet up the track (to right) is Lock No. 6 and Dam of the Allegheny River and this is the locality for the pebbles (the shoreline for about 500

feet). We had to walk the distance, Betty wanted to go along too, and it turned out to be quite a prolific locality. Among the many minerals found (all pebbles) were:

ALLANITE: black crystals in weathered grayish granite.

AMPHIBOLE (hornblende): black crystalline in granite.

CUPRITE: dark red masses with massive smoky quartz.

HEMATITE: reddish geodes (broken).

LABRADORITE: dark gray masses.

MALACHITE: green stains on quartz with cuprite.

MICROCLINE: red, in pegmatite.

MUSCOVITE: small flakes in gray granite.

QUARTZ (chalcedony) bluish-gray vein in black chert.

QUARTZ (chert): dark gray mass.

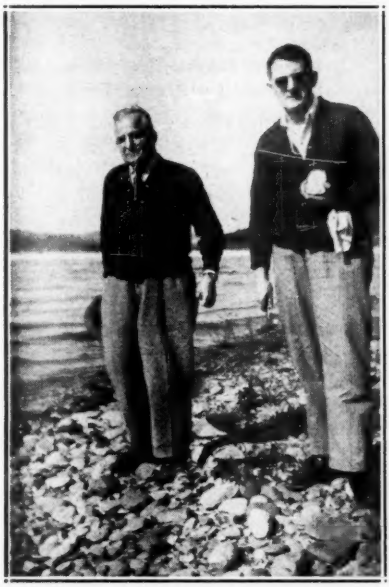
QUARTZ (jasper): very common as good brownish pebbles from tiny up to 1 x 2 inches.

TOURMALINE: black crystals in dark gray granite.

Some river gravel (mostly brown jasper and milky quartz) and river sand (dark gray, coarse-grained) consisting chiefly of quartz with a little magnetite were also collected.

The other locality was the 2nd falls of Jackson Run (known also as Ratling Run) located ½ mile south of Jackson Road. If you want to know how to reach the locality, contact Howard.

We parked the car at the Kiski Valley Coal Co., mine (not working today so no one was around). The mine openings (tunnels) are up a little ways on the side of the mountains (both sides of the valley) with a long trestle connecting them. The tipple (where the coal is dumped) is in about the center of this trestle, near which we parked. Along the right edge of the little valley is Jackson Run and to reach the 2nd falls we followed a path from the tipple, about 1,000 feet which brought us to the 1st falls (6 feet high in the 30 foot wide stream). About 1400 feet further down stream is the 2nd falls (20 feet high in the 30-foot wide run). Then 100 feet further in the gray sandstone wall on the right, was a large petrified log imbedded in the solid rock. This rough log was about 10 feet long, 8 inches in diameter and 10 feet below the top of the bank or 30 feet above the water. The log was lying almost horizontally in the horizontally bedded sandstone. A specimen, 4 x 4 inches in size and weighing 1¾ lbs. was obtained (from loose material lying below the log). It is mottled



The author (left) and Howard Hamilton (right) at Kelly's Station, Armstrong Co., Pa., pebbles locality. The pebbles were dredged from the Allegheny River (in background).

Photo by Betty Hamilton Sun. Oct. 15, 1950

gray, brown and dark brown in color and has been completely replaced by sandstone. It is not an attractive specimen and not suitable for polishing.

2050.6 miles—Kiski Valley Coal Co., mine.

2050.7 miles—Jackson Road, we turn left.

2051.7 miles—We turned left on Old State Road out of Apollo.

2053.1 miles—Stone church on 1st street in Apollo, on Pa. 56.

2055.7 miles—Beginning of bridge in North Vandergrift on Pa. 56.

2056.2 miles—Hamilton home in Vandergrift.

The rest of the day was spent in inspecting again Howard's collection (he has some mighty nice specimens and many from old Pennsylvania localities). The evening was spent in calling on the parents of the Hamiltons who live a few miles out of town.

Monday, October 16, 1950
(10th and Last Day of Trip)

No collecting today as Howard had to go to work and I had to go home. The 6:50 a.m. bus out of Vandergrift for Pittsburgh was taken by me and reservations easily made on the 10:15 a.m. plane for Newark, N. J., thence by limousine and train I reached Peekskill, N. Y., 4:00 p.m.

This was one of the most enjoyable trips I ever made due to the many collectors visited or met. Those collectors we called on—the Klinks, Gettings, Simons, Reeves, and Sarles—outdid themselves in their warm welcome and hospitality and we owe them many thanks. Their many kindnesses will never be forgotten. Our grateful thanks are extended also to those members of the Cincinnati Mineral Society who gathered in the home of Mr. Sarles to greet us on our first visit to Cincinnati. They were such an enthusiastic and friendly people that we felt right at home among them.

To Howard and Betty Hamilton, I am deeply indebted. Words fail me in my efforts to express adequate thanks. All I can say is that someday, I hope, it may be my turn to do them some favors.

M/M Editor Doing A Fine Job!

Editor R & M:

The Micro-mount Editor is doing a fine job —please keep him at it. Frank Desautels, here in Baltimore, is another—ask him for an article. Would like to read more of Lou Perloff.

Charles W. Smith
Baltimore, Md.

June 13, 1951

NATIONAL SAFETY TITLE FOR MINERAL INDUSTRIES WILL BE DECIDED IN FALL

WASHINGTON, June 27, 1951—America's greatest first aid and mine rescue contest is set for Columbus, O., next October 2, 3 and 4. Competing for national honors will be teams from all minerals industries, including coal, metal, and non-metal mines; petroleum fields and refineries; and mills, smelters, and quarries.

Sponsored by the U. S. Bureau of Mines, producing companies, and union organizations, the contest is expected to attract more than five hundred workers and officials from 35 states. But it will inspire "hundreds of thousands of others" with increased safety consciousness, according to J. J. Forbes, chief of the Bureau's Health and Safety Division and chairman of the contest.

"The value of contests of this type was recognized by the Bureau of Mines as long as 40 years ago," Mr. Forbes explains. "Such competition instills workers with a safety consciousness and makes them more alert to practices that can causes accidents. Industry spends millions of dollars on safety and the Bureau carries on a board program of instruction in first aid, accident prevention, and mine rescue, but the most important factor in safe working and safe living will always be vigilance and care on the part of the individual."

W. H. Tomlinson, chief of the Vincennes, Ind., branch of the Bureau of Mines, is secretary of the contest committee.

DR. STENBUCK IN THE NEWS

Dr. Frederick A. Stenbuck, 182 Park Ave., Mt. Vernon, N. Y., had a most interesting article, "The Lapidary Art as a Hobby," in the June, 1951, issue of THE NEW YORK PHYSICIAN. In the article Dr. Stenbuck related how he became interested in cutting minerals back in 1945 and in conclusion stated that the best way to get started is to latch unto someone who has already made some progress in the art, and from there on develop one's own ideas.

Dr. Stenbuck was the speaker at a recent luncheon of the Mt. Vernon Kiwanis Club. His subject was lapidary and he displayed 3 cases full of beautiful cut stones—samples of his work.

Dr. Stenbuck, one of Mt. Vernon's leading physician's, is a member of the R & M A.

MASTODON FOUND NEAR PORT ANGELES, WASHINGTON

By WILBERT R. DANNER
Dept. of Geology, College of Wooster
Wooster, Ohio

On April 19, 1950, while excavating for a reservoir on his ranch, Frank Malevec and power-shovel operator Jack Ruona came across a tusk and pelvic bone of a Mastodon. A photograph of the fossils appeared in the SEATTLE TIMES of April 20th and caused considerable local interest. A team of scientists led by Dr. William Massey, University of Washington anthropologist, was sent by the University Museum to investigate the discovery and if possible to collect the remains for exhibition in the museum. The writer was the geologist of this group.

The discovery area is approximately 5½ miles east of the city of Port Angeles. A reservoir was being excavated at the foot of a hill on the south side of the Malevec ranch. It is fortunate that the excavation was made where it was or the bones probably never would have been discovered. It is fortunate also that the remains were situated in what was to be the reservoir wall, otherwise they might have been destroyed.

The pelvic bone and tusk had been taken by Mr. Malevec to his front yard where many local residents came to view them. Many curious people also visited the excavation. Mr. Malevec was very cooperative and very willingly donated the fossils to the University and gave our party permission to dig for more. He was also of great assistance in the difficult task of uncovering and removing the other bones.

On visiting the excavation a careful examination revealed the possibility that the entire skeleton could be found. A tooth and bone fragments were found on the waste piles around the reservoir. Preliminary excavation work was started late in the afternoon of the 22nd and continued until dark. The work was hampered by cold and unpleasant weather.

The following day brought better weather and the difficult task of removing the main mass of bones began. They were buried in a gray to almost white clay about 4 feet below the surface. Along with the bones were numerous tiny fresh water snail and clam shells and interesting plant remains some of which appeared to be hollow seed pods. Much of the digging around the bones had to be done with the hands and was not a pleasant task. The many small shells scraped the diggers hands almost raw.

A hole was excavated about four feet deep in the reservoir side. It was found that the bones were very close together and in some cases interlocked. Most of them were at or just below the water level in the reservoir. A tusk projected

Fig. 1
View of reservoir where the discovery was made. The bones were found near the far corner.

out from the bank a few inches above the water level. It was necessary to build a thin mud dam to prevent seepage into the hole but this measure proved to be unsatisfactory and by late afternoon further work was almost impossible. Our party was unable to remain another day and so complete the recovery. It is planned to return in the future with the necessary equipment to excavate the remainder of the bones.

More than 50 pieces were recovered including 2 tusks, a pelvic bone, the complete lower jaw with teeth, toes, vertebra, ribs, teeth and foot bones. All were in an excellent state of preservation. One of the tusks had been broken. The other was about 79 inches long with a polished tip that looked almost as fresh as the tusk on a modern elephant.

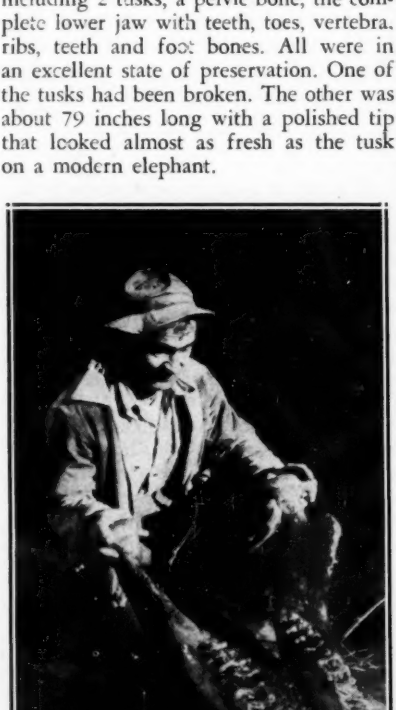


Fig. 2
Frank Malevec on whose land the discovery was made showing the lower jaw with teeth.

The mastodon is believed to be a young one and had evidently become mired in a Pleistoscene swamp. There was no indication that the bones had been disturbed after their original deposition.

Fig. 3
Dr. William Massey with one of the tusks.

An interesting sequence of sediments was exposed in the walls of the reservoir and up the hillside to the south. The lowest exposed formation was composed of blue sand, gravel and clay containing abundant shells of fresh water snails and tiny clams. Above this was a gray to

white clay containing some shells and plant remains. The bones were found in this formation. The exact nature of the white clay has yet to be determined. Above the clay was a layer of black peaty soil. It was weathered at the top with a thin layer of orange clay indicating the weathered zone. The sequence seems to indicate a body of water becoming stagnant and turning into a bog. A small unidentified vertebra was found in the black peaty soil.

Above the weathered surface was a relatively thick layer of sand and gravel overlain by till containing many boulders. These deposits are interpreted as indicating the advance over the area of a glacier probably of the last (Wisconsin) glacial period. If the interpretations are correct the bones lie in deposits of the interglacial time before the advance of this ice. It is probable therefore, that they are between fifty thousand and one-hundred thousand years old. A careful study of the glacial geology of the surrounding area is needed before a more accurate determination can be made.

Mastodons resembled Mammoths and present day elephants. They differed chiefly in the size and character of their teeth. Mastodon teeth were smaller and were made up of paired cones. Mammoth teeth might best be described as made up of a series of ridges. Mastodons are believed to have entered North America by way of the Bering Strait Land Bridge back in Miocene time. They were browsing animals and lived chiefly in forest areas.

This discovery represents the first time that an almost complete skeleton of a Mastodon has been discovered in western Washington. Teeth have been reported from at least two localities but no other remains have been uncovered (Hay 1927). Never has a discovery been made in this area with conditions to study it as excellent as this.

It is hoped that the remainder of the bones can be removed in the near future and a detailed investigation made of the area. The material excavated is now on exhibit at the University of Washington museum.

Reference

Hay, Oliver P. (1927) "The Pleistocene of the Western Region of North America and its Vertebrated Animals," Carnegie Institution of Washington Publication No. 322-B.

MARSHALL PLAN TO AID TURKISH LEAD MINES

Bridging a gap of 1,400 years, the Marshall Plan is helping Turkey plan the development and reopening of lead mines which have lain idle since about 600 A.D.

Under the technical assistance program of the Economic Cooperation Administration, American consulting engineer, Ronald Campbell Rutherford of Los Altos, Calif., is en route to Turkey on a four-months contract with the Turkish government to help determine the advisability of reopening the mines and constructing a smelter plant to process the ores.

If the project should prove feasible, it would be of great economic importance to Turkey, which now imports all of her lead requirements. A smelter would lead to development of additional mines, providing the country with an exportable surplus of lead and profits from the related minerals and precious ores, proponents of the project believe. Turkish records indicate substantial lead, gold and silver ores are available.

Rutherford will study the possibilities of direct smelting the high-arsenic low-lead, gold and silver of the Bolkardag mine, and the lead concentrates of the Keban mine, neither of which has been operated since a few centuries after the time of Christ. Turkish officials said crude shovels and tools found in the Bolkardag mine indicate it was last worked around 600 A.D.

One of the Marshall Plan objectives is to make Turkey as nearly self-sufficient as possible in the production of lead, conserving valuable foreign exchange for the purchase of other products which Turkey cannot produce herself.

PETRIFIED WOOD FOUND IN MASSACHUSETTS

In the last issue of ROCKS AND MINERALS it was announced that petrified wood had been found at Foxboro, Mass. (p. 267). Part of the credit for the discovery should be given Arnold M. Dixon, Chestnut St., RFD 403, Foxboro, for sending in a specimen to R & M for identification. The specimen was 2 x 2 x 2 inches in size, brownish in color, and had a chalcedony center. A letter from Mr. Dixon informed us that the specimen was cut from a chunk his son-in-law, John H. Warren, discovered while enlarging his cellar. Mr. Warren lives at 21 Union St., Foxboro, about ½ mile west of the center of the town.

Since then Mr. Dixon has sent in more specimens and more information. The chunk found by Mr. Warren was 5 x 3 x 2 inches in size and it was uncovered the last week in March, 1951.

Mr. Claude D. Young, who lives on Chestnut Street in Foxboro and is a neighbor of Mr. Dixon's, also found a chunk of petrified wood that was 12 x 12 x 8 inches in size; this was found either in 1943 or 1944.

A letter from Mr. Dixon, dated April 8, 1951, brought this information:

"Sometimes during the years 1943-1944, Mr. Claude D. Young brought me some fragments of yellowish chalcedony which he claimed had been dug up in his yard. My curiosity was aroused as the mineral was definitely not native to these parts. On questioning as to whether or not he had more of the material, he produced more pieces and from one of them I cut a pear-shaped pendant for his wife. Further conversation revealed that he had dug up a chunk at least 12 x 12 x 8 inches in size and had broken it into smaller pieces which he had buried either in his driveway or behind a retaining wall that borders the drive. Sometime later he drove into my yard and gave me six pieces ranging from about a pound to possibly 4 pounds in weight. He said he had a pretty good idea where they had been buried and had dug them up for me. Being a little cramped for space indoors, I deposited them on my outdoor rock pile and they are still there but I notice they are showing signs of weathering.

"Mr. Young's house is on the west side of Chestnut Street and sets back from the highway over a hundred feet. It is situated on the summit of a slight rise (about 8 or 10 feet).

"The chunk of chalcedony (petrified wood) was found near the house and was buried 2 or 3 feet in the soil. The soil, apparently, had never been disturbed.

"Sometime around April 1, 1951, John H. Warren gave me a chunk of rock roughly oval in shape, about 5 x 3 x 2 inches in size, which had the same characteristics as the Young find. I sawed off one end and showed it to Mr. Young. His response was 'So you finally cut my rock.'

"The Warren rock was found while digging a bulkhead entrance to his cellar. It was found about 4 feet below the surface and near the cellar wall; could possibly have been in the backfill behind the cellar wall. The Warren house is on the west side of Union Street nearly opposite the entrance to Rockhill Cemetery. Union Street is situated between granite ledges on the west and swampy ground on the east. The street and much of the east side property are old fill. Near the Young property is an abandoned gravel pit which has not been used in the last 50 years and possibly the Union Street fill came from this old pit."

The petrified wood from the Young property is white in color (parts stained brown by iron), massive, and does not show the wood structure very well.

Wishes Often Come True!

Editor R & M:

My wife and I are just back from an all day mineral hunting trip in the back areas of southern Vermont. After reading your article in the May-June, 1949 issue for a bed time story last night, I've wished all day that you were with us to tell me all about the interesting rocks I saw on the trip. You certainly write interesting articles and put in enough detail so I feel as if I were along with you on your trips.

Harold C. Patch
Perkinsville, Vt.

May 20, 1951

SPECIAL MINERAL & ROCK COLLECTING IN THE ROSICLARE FLUORITE DISTRICT OF SOUTHEASTERN ILL.

By JOSEPH SCHRAUT
St. Louis, Mo.

Many articles have been written describing the magnificent collecting of fluorite in the Rosiclare District of Southeastern Illinois but few articles describe or even mention the many associated minerals and rocks that occur with or near the multi-colored fluorite. The associated minerals collected or seen by the author are calcite, galena, sphalerite, chalcopyrite, pyrite, marcasite, hydrocarbon, barite, malachite, quartz, smithsonite, cerussite, aragonite, witherite, strontianite, gypsum, limonite, and stibnite; and the rocks collected were lamprophyre, mica-peridotite, and volcanic breccia.

The occurrence of the associated minerals is somewhat influenced by the occurrence of the fluorite which is found commercially in three types of deposits. They are the large vein-types which has the fluorite filling nearly vertical faults; the bedded-types which are flat-lying tabular masses (locally called "blanket ore") forming part of the series of sedimentary rocks; and the final type deposit is the surface deposit called the "gravel" deposit which is fluorite from exposed veins that had been concentrated by erosion into a layer of clayey or sandy soil.

Calcite is the most abundant associated mineral in the vein-type fluorite deposit. It varies from massive and coarsely crystalline here to excellent 2 inch to 6 inch dogtooth crystals with phantom intergrowths in the bedded-type fluorite deposits. Calcite occurs also as crystalline growths on fluorite, barite, quartz, and sphalerite. The colors are opaque grey, milky, light brown, and dark brown. Some rare pink calcite can be collected. An exciting recent find has been clusters of milky white transparent to translucent, euhedral crystals of calcite. The crystals are long hexagonal (similar to quartz) and terminated into a blunt three-sided pyramid. Crystals of purple fluorite are occasional inclusions in large dogtooth crystals of calcite as is galena.

Galena is the most abundant sulphide in the vein-type fluorite deposit and can be collected as large crystalline masses with octahedral or cubic faces depending perhaps upon silver content as the galena in the Rosiclare district is more notably argentiferous than the galena of other deposits of the Mississippi River Valley. It also can be collected as disseminated grains and veinlets in fluorite. The galena usually occurs with fluorite, calcite, quartz, sphalerite, and chalcopyrite. Earth faulting has crushed and granulated the various ores into what is known locally as "steel galena." Occasionally secondary lead minerals may be developed on exposed surfaces of the galena, e.g., cerussite as films or crusts. Galena occurs as large cubic crystals or crystalline masses with octahedral or cubic faces in the bedded-type deposits.

Sphalerite occurs in the vein-fluorite deposits as amber-brown lumps and grains scattered thru the vein minerals. Occasional intricate crystal forms can be found in druses or vugs in the veins. In the bedded-fluorite deposits it is a different story. Excellent shiny iridescent black and resinous crystals and crystalline masses coated with aragonite or witherite crystals are found on cloudy quartz crystals or in vugs in the orebodies. This shiny black sphalerite occasionally contains enough iron to be called marmatite or even possibly christophite. Barite crystals frequently coat this type sphalerite. Massive dark sphalerite also alternates with light colored fluorite as a deposit termed locally "coon tail" ore which makes a unique structure to be collected. Smithsonite can be found as films or crusts on the sphalerite or as "turkey fat" on fluorite crystals.

Small euhedral octahedrons and tetrahedrons of chalcopyrite are seen "floating" in fluorite or stuck on the surface of the fluorite. Also "scepter" or capillary crystals are en echelon in the fluorite. Chalcopyrite occurs associated with sphal-

erite and galena as euhedral crystals and as crystalline grains and clusters. Where groundwater activity was high the exposed chalcopyrite decomposed to malachite, however, the green staining is more predominate than the plates or scales of malachite.

Pyrite appears to be a rather minor mineral in the vein-fluorite deposits and specimens show it generally as small cubes in the fluorite and calcite. The pyrite is also found as small veins inconspicuously disseminated in the orebodies and the vein walls. Occasionally pyrite crystals, cubes and pyritohedrons, have been collected in a matrix of massive marcasite. Perhaps this is actually a marcasite pseudomorph after pyrite although this seems improbable. In the bedded-fluorite deposits pyrite is found as scattered crystals in and on fluorite and calcite.

Cavities in the veins occasionally furnish stalactitic forms of marcasite; these are frequently oxidized to limonite with the pseudomorphs of crystals poorly preserved. Marcasite is more abundant in the bedded-fluorite deposits than in the vein fillings. It forms radiating clusters and groups that make attractive but rather small specimens.

Hydrocarbon (bitumen) is collected as viscous black to brown masses and films on quartz, fluorite, galena, and sphalerite. It also can be seen as a dark brown liquid oozing thru crevices, cracks, and fissures in the orebodies. What makes hydrocarbon more important as a mineral to be collected is its infrequent occurrence in fluorite. Small amber to dark brown movable globules or bubbles enclosed in light purple fluorite cubes would make any mineral collector's mouth water just a little! The hydrocarbon can be seen as amber colored liquid working its way thru the limestone country rock.

In the vein-fluorite deposits, barite occurs in small crystalline masses associated with fluorite and an occasional well-formed white, brownish, or "tiff-blue" crystal may be found in cavities of the veins. However in the bedded-fluorite deposits the barite becomes more massive and more showy as large brownish or white crystals in clusters can be collected coating quartz, fluorite, sphalerite, calcite, and limestone. The massive white barite displaces, pushes, and shoves whole shale strata into a jumble of huge shale fragments cemented by white barite. The end result is a sort of a huge breccia very pleasing to the eye. The white barite can be collected as a thick coating enclosing cubes of dark purple fluorite. Usually there are crystal laths of barite sticking up on this coating along with clusters of dogtooth calcite and/or white and milky needles and coatings of aragonite on the laths or on the barite coating.

The most showy of associated minerals is the quartz crystals in the bedded-fluorite deposits. It occurs here in beautiful milky translucent crystals similar to and even suggesting the type crystals seen in the amethystine groups of Georgia, Missouri, and elsewhere, however, no amethyst has been seen. Crystals are extremely showy, especially when the groups have a light sprinkle of shiny black crystals of sphalerite or small purple cubes of fluorite on them. These quartz crystals range in size from ¼ inch to 2 inches in diameter. Infrequently the quartz occurs as crystalline grains in the "coon tail" orebodies. In the vein-fluorite deposits the quartz occurs as minute yellowish-brown crystals in cavities of earlier deposited minerals. The prism of the crystals is rarely well developed and the terminal pyramid faces are small.

Another showy associated mineral is the aragonite crystals, coatings, and needles in the bedded-fluorite deposits. The needles and coatings have been previously mentioned. The aragonite crystals are more or less similar to the needles on the barite coatings but differ in that they form groups of acicular crystals in druses of the various minerals in the orebodies. The crystals fluoresce a pale yellow-green under the mineralight. The aragonite was not seen in the vein-fluorite deposits but probably occurs there as groundwater activity is high.

Recently, two newcomers to the mineral associates of fluorite in the Rosiclare District have been discovered. They are crystalline witherite and strontianite and have been found so far in the bedded-

fluorite deposits. The witherite crystallizes in vugs of the barite and on fluorite cubes; the strontianite crystallizes in vugs of the witherite; and in vugs of the strontianite there appears minute groups of a blue crystalline mineral recently identified by spectrographic and chemical analyses as celestite. The witherite can be collected as fibrous masses 1 inch to 6 inches in diameter and as excellent pseudo-hexagonal crystals or crystal clusters. Crystals vary in diameter from ¼ inch to 3 inches with one termination. The colors are yellowish to light brown and fluorescence is a bright greenish-blue. The strontianite is massive, crystalline, and a light pink in color. There are occasional vugs of strontianite acicular crystals. Imagine holding a hand specimen composed of blue-edged yellow fluorite cubes, black sphalerite crystals, yellowish witherite crystals, massive white barite, pinkish crystalline calcite, pink strontianite, minute groups of blue celestite, and brassy groups of pyrite and chalcopyrite!

Gypsum is infrequently collected and is an uncommon mineral for the area. It has been seen as crystalline tufts and powdery coatings in only the near-surface or gravel workings. It may be derived from groundwater action on marcasite as the waters circulate thru the orebodies and the limestone strata.

Residual iron oxides primarily limonite are abundant on the surface of the area. It is collected as pipes and masses in residual concentrations from the weathering of the limestone of the area. Collecting is reminescent of the Missouri-Ozark limonite-sinkhole deposits.

Stibnite has been reported from only one orebody but was not collected by the author. It was reported by Bain as traces and small grains in the workings from one mine.

The igneous rocks that are collected in the Rosiclare District are lamprophyre, mica-peridotite, and volcanic breccia. All three types are severely altered, so that a close classification cannot be made. The lamprophyre occurs as narrow dikes and sheets enclosed in the sediments and is, in general, composed of conspicuous sheets of phlogopite, small crystals of pyroxene partly altered to serpentine, and fresh prisms of apatite, in a dense groundmass almost wholly altered to calcite but still preserving the remnants of a pattern suggestive of former feldspar laths. The lamprophyre can be collected along the Ohio River bluffs from Rosiclare to Golconda, Illinois.

The mica-peridotite rocks are found only as dikes and are composed of olivine and pyroxene crystals, either partly or largely altered to serpentine, together with phlogopite, iron oxides, and obscure alteration products. The mica-peridotite occurs in the same general area as the lamprophyre.

The most interesting igneous rock to be collected in the Rosiclare District is the volcanic breccia at Sparks Hill, Illinois. The intrusion is roughly elliptical and is composed of angular to rounded pieces of both igneous material and sediments, together with fragments of various feldspars, grains of quartz, and much alteration material.

The above descriptions were taken from Weller who also states that there is some shallow recrystallization along the contact between the igneous rock and the sedimentary. Thus metamorphic contact zones can also be collected.

Rosiclare District of Southeastern Illinois has eighteen minerals, three igneous rocks, and various metamorphic contact zones that can be collected along with the multi-colored fluorite. The celestite is too uncommon at present and is still being investigated.

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WORLD'S LONGEST AND HIGHEST SLOPE CONVEYOR

Akron, Ohio—The world's longest and highest slope conveyor system, using belts designed by The Goodyear Tire & Rubber Company of Canada, Limited, will soon be installed in a mine which extracts iron ore from beneath the floor of the Atlantic Ocean.

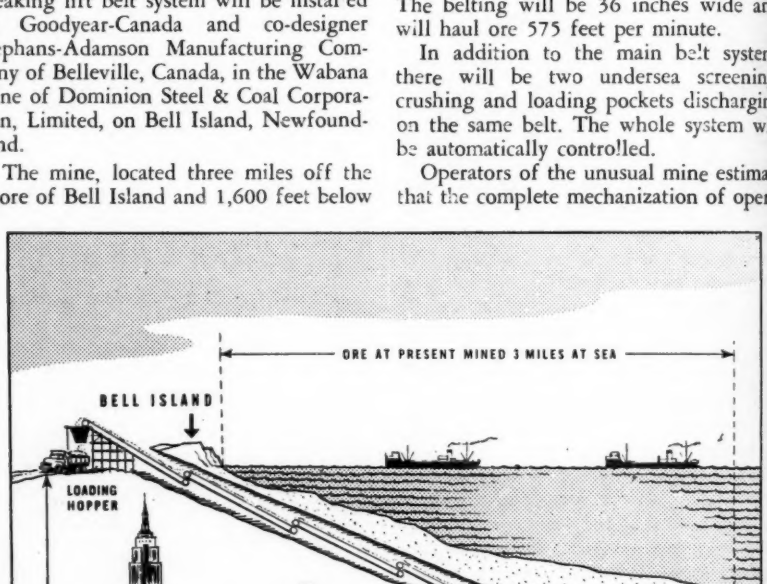
Surpassing a previous world's record for a lift belt of 862 feet which was set by the parent Goodyear Company in the United States, the 1,730-foot high, record-breaking lift belt system will be installed by Goodyear-Canada and co-designer Stephans-Adamson Manufacturing Company of Belleville, Canada, in the Wabana mine of Dominion Steel & Coal Corporation, Limited, on Bell Island, Newfoundland.

The mine, located three miles off the shore of Bell Island and 1,600 feet below sea level, has been in operation for 50 years. In the beginning loading of ore was done by hand but was replaced by mechanical equipment and transport was handled by electric locomotives.

The complete lift belt system, which features compass rope belts of Goodyear design, will deliver a thousand tons of ore an hour up a slope 12,500 feet long. It will consist of two flights 1,450 feet long and eight flights 1,230 feet long. The belting will be 36 inches wide and will haul ore 575 feet per minute.

In addition to the main belt system, there will be two undersea screening, crushing and loading pockets discharging on the same belt. The whole system will be automatically controlled.

Operators of the unusual mine estimate that the complete mechanization of opera-



Akron, Ohio—Artist's drawing shows longest and highest slope conveyor belt system in the world, soon to be installed in an iron ore mine located 1,600 feet below the floor of the Atlantic Ocean. Designed by Goodyear Tire & Rubber Co., of Canada, Ltd., the record-breaking belts are being built for a mechanization project in the Wabana iron ore mine on Bell Island, Newfoundland, operated by Dominion Steel & Coal Corp.

tions will increase production of the mine's high grade iron ore by more than three times their present rate.

The ore of the Wabana mine is an oolitic red hematite composed of small concretions varying from ½ to 1/10 of a millimeter in size. Three ore beds, the largest 30 feet in thickness, are being worked. These ore beds occur in flat-dipping Ordovician sandstones and shales. Thin beds of oolitic pyrite are a unique occurrence in the deposit.

RAMBLINGS OF A ROCKHOUND

By R. F. HENLEY
4075 19th Street, San Francisco 14, California

Well, the annual convention and the big mineral show of the California Confederation of Mineralogical Societies at Oakland, June 22, 23 and 24, has come and gone. To me it was three glorious days of visiting and sightseeing. There was an acre of fine minerals and fine friends and I enjoyed them all. I do not know if I really saw *all* of the show because my friends would not let me. I thought I saw the show at Sacramento in 1949 but later when I read Lelande Quick's write-up in his LAPIDARY JOURNAL he listed so many fine things I did not see that I vowed *this* time to go over it with a magnifying glass and overlook nothing. So I would head for the first aisle intending to go down one side and back the other but before I even started I would meet some friends and go into a ten minute pow-wow. Before we finished up would come some more. When I finally started down the line I could not go ten feet without meeting more friends and someone would say "Come over here to the other side, I want to show you something," and then my planned schedule would be all off so I finally gave it up. But I did see most of the high lights of the show (I think.)

Right inside the main entrance and blocking the way was Jessie Hirsch's big display of fine minerals. A block of adamite on limonite as big as a water pail! The piece she gave *me* was no bigger than a silver dollar and I think I should have had the other one! A block of beautiful blue fluorite crystals on calcite as big as the adamite and she only gave me a piece the size of the little adamite. But with apologies to Jessie, I love those little specimens and often gloat over them. Her alibi is that I once told her I had no space in my cabinet for large specimens. She also displayed a block of Arizona malachite as big as several waterpails and a 6 inch sphere made from wonderstone mounted on ball bearings so it can be rotated in any direction. A teatable made from a petrified log from Arizona and about 20 inches in diameter which took Bill La Rue two months to saw not to mention polishing and he had to build a special machine for each job.

Down beyond Jessie's display I saw Mrs. J. R. Mathieu's display of about a hundred spheres shining like stars. She did them all herself on the automatic machine which her husband manufactures and the only help she had was for her husband to place the heaviest stones in the machine and remove them when finished as some of those spheres were I should say at least 8 inches in diameter. Next was the booth of Lelande Quick and his LAPIDARY JOURNAL and his half-pound Australian fire opal perfectly polished and not a flaw in it. A little farther on was the million dollar diamond display which left me cold. There was a railing around the space and the cases were at arms length away and one could not get a close inspection as at other displays where it was possible to look right into the case. I saw one diamond with a label giving its value as $100,000 but it did not appeal to my eye as much as the faceted stones, principally titania, displayed by Frank Wilcox, member of the

host society, East Boy Mineral Society. Mr. J. Lewis Renton of Portland was there and displayed his fine collection of colored slides of minerals. And there were also Donal Hord's jade statues of "Thunder" and "Lady Yang" on which he and his assistant worked for two years, working eight hours per day. Raymond Addison of San Jose displayed his collection of cameos with some new ones added since last showing. They are in a class by themselves in this whole world. Some people who know nothing about it even dispute that they are hand carved, but Mr. Addison put in from 40 to 200 hours on each one of those gems and they are as perfect as any photograph.

Lelande Quick reminded me that I had promised to bring him a small piece of orchid star quartz (see LAPIDARY JOURNAL, April, 1951, page 82), so the second day I brought him several pieces. He said Dr. Willems would be interested in it, also, so we walked over to the booth of Dr. J. Daniel Willems of Chicago, well-known author and faceter, where I was introduced and with whom Mr. Quick divided the quartz. I started to pick out a few Herkimer County "diamonds" from Dr. Willems' stock with Mrs. Willems waiting on me when the Doctor came over and said "Give him anything he wants and do not charge him anything." He then asked me if I had any kunzite and I said "No." So he gave me a small piece of gem quality, something I had never hoped to own. I later found a few more pieces of the star quartz which I brought him next day.

Passing down from Dr. Willems booth I stopped at the table of W. B. Decker of Santa Monica to admire his minerals. He had some fine slabs of howlite, beautifully marked. This type is now hard to find as most of it is plain white. When I admired it he said "take one." A ten minute chat with a rockhound I had never met before and he opens up his heart! If I have any of that star quartz left I am to send him a bit.

These are the high lights of the show as I saw them. No doubt all the mineral magazines will have articles about it and will tell you of many things I missed but I think the best part of such a show is the meeting of friends who came all the way from Seattle to San Diego. Next year the show will be at Angels Camp and in 1953 it is expected to go to San Diego but they will have a hard time equalling the show of 1951.

WHY I'M NOT A LAPIDARY

By DON ALFREDO
322 Linda Vista, Las Cruces, N. Mexico

So many people have asked me how I can be an ardent rockhound and an avid collector of minerals, without becoming a lapidary, that I've become tired of answering them. Therefore, once and for all, in a publication which is read by everybody of importance, I now give my reasons:

Ever since time began—well, for a good many years, at least—men (or some of them) have been cutting and polishing various hunks of precious and semi-precious stones. They were neither precious nor semi-precious, of course, until men started doing these things to them. They were just more rocks. But finally someone made some improvements on some kind of a rock—perhaps by accident—someone else noticed it and succeeded in duplicating it (oh well, have it your way,—produced a similar effect) and the lapidary art was born.

The guy who whittled out the first stone soon discovered that everybody (well—nearly) wanted to see it. He got tired of holding it up to show people, so he devised a means of attaching it to his clothing—or whatever they called the things folks wore in those days—so everyone could admire it with the least bother to the wearer. This, of course, resulted in more and more people turning to look at it, and the more people looked at the stone, the more looked at the wearer. Perhaps this wasn't the birth of vanity, but it surely gave vanity a healthy boost. And so more and more folks wanted pretty stones to wear and, as a natural consequence, more and more primitive artisans took up stone-busting as a liveli-

hood and thus the lapidary craft grew.

Now these lapidaries weren't making ornamental stones for anything but adornment—personal or structural. They weren't making watch jewels nor diamond dies for wire extrusion—that came later. They were merely contributing to vanity. Now I have nothing whatever against vanity. I don't believe in whatever moral is expressed or implied in the story of the gentleman who was found nude on Fifth Avenue one night and who, on being arrested and asked what he was doing in the middle of Fifth Avenue sans clothing, replied, "To wear clothes is vanity, and vanity is a sin." No, I have nothing against vanity and so, if for no other reasons, I DO wear clothes. But beyond the wearing of clothes I guess I'm not very vain because I don't seem to go very heavily for jewelry wearing. Raising whiskers, as I have several times done, is a lot less expensive and less time-consuming, saves steel for the army (razor blades, you know) and really attracts quite a bit more attention. And besides it makes a guy look more intelligent. Give a guy bifocals, a beard and a cane and he'll pass for a doctor, a professor, or a clergyman any time—even though he sells pencils for a living.

No, I don't do much jewelry-wearing, and that's one reason for not being a lapidary. Having been reasonably successful in everything I've tackled (except such things as might lead to early retirement without financial worries) including glaceeing apples on sticks (which is a horrible thing to do to an apple) and making ships in bottles, I believe I could have become a capable lapidary and made a living at it. I say, "could have" but it ought to take a long apprenticeship, and when a guy's fifty-one, it's a bit too late for that, so I can't be a professional. This leaves the only other kind of a lapidary I might be—an amateur. Why are there such things as amateur lapidaries? I guess mostly because they like to see what the insides of rocks look like, but partly because they want more jewelry than they can afford to buy. And the reason they want more jewelry is because they want to attract attention—they're vain. Or they want to doll up their wives and/or sweethearts. And that is still another kind of vanity, but I'm not against that kind either.

Well then, I could be an amateur lapidary and doll up my sweet woman, but my sweet woman doesn't need any dolling up, and if she did, she's got all the dolling-up stuff she needs. If she put it all on at once, she'd have to be helped up from her chair.

So I could be an amateur lapidary and doll myself up. Well, you take a face that would stop a clock, mount it atop a gangling (not exactly long and gangling, but gangling just the same) body that gets from place to place with neither elegance nor grace of motion, nobody's going to look at it twice anyway, unless perhaps to get two laughs instead of one. Well, that kind of critter am I.

Now, I don't mind having people look twice and laugh twice. Or even three or four times. But when I set about doing something to *make* people look twice, well—I can think of lots of ways of doing it without spending a lot of time whittling down an agate to pin onto me. Its been a long time since I've done it, but I know I could pick it up very quickly: I can cut out dandy paper dolls—great big ones—out of bright-colored crepe paper. I could wind a few yards of these around my torso and meander down town and get a lot more attention than I would by sporting thirty or forty pounds of rocks. Or with less difficulty I could merely walk to the center of the street, remove my sombrero, gaze skyward, and "freeze" in this position. I haven't tried this either, but have been assured that it works. After twenty or thirty minutes of merely looking skyward, one is practically assured of ample attention. The situation is, however, one which is somewhat difficult to get out of in that it must be explained. In the paper-doll scheme, one need only keep going until well out of town.

So that's why I'm not a lapidary. But I keep asking for lapidary equipment catalogues, well, maybe I won't be ab'e to stave it off forever.

WORLD NEWS ON MINERAL OCCURRENCES

Items on new finds wanted. Please send them in.

Abbreviations: xl—crystal xled—crystallized xline—crystalline

ALABAMA—About 5 miles southwest of Walnut Grove, Etowah Co., Ala., nice specimens of pyrolusite have been found in the manganese deposits of the area.

ARIZONA—Nice specimens of turquoise come from the Indian Mine, Chloride, Mohave Co., Ariz.

ARKANSAS—In the last issue of R & M, mention was made about the Club House Cave in Arkansas which furnishes nice brownish stalactites (calcite). Byron C. Marshall, 204 Central Avenue, Hot Springs National Park, Arkansas, informs us that the cave is located about ½ mile north of Cushman, Independence Co., Ark. A short article on Arkansas caves has been sent R & M by Mr. Marshall and if room can be found it will appear elsewhere in this issue.

In a letter from Mr. Marshall, dated June 18, 1951, appears this item: "This past winter I spent eight full different days collecting mineral specimens at the famous Magnet Cove, Hot Spring County, Arkansas. I have just received a report from the U. S. National Museum, about a specimen I sent to them for determination. Dr. George Switzer, states it is the variety of the feldspar mineral Albite called "cleavelandite," consisting of aggregates of platy crystals. So far as I can find this variety is new for the Cove, and also for the State. However, I do not have all the literature on Arkansas minerals but do have most of it. The regular Albite in crystal aggregates and massive is quite common at the Cove, but this particular variety must be rare, as I have only collected or seen the one specimen, about half as large as my fist."

CALIFORNIA — The following item has been received from Carlton M. Carson, Box 811, Ventura, Calif.:

"Am sending you a piece of basalt carrying natrolite and analcite in amygdaloidal cavities. This is from a flow of probable Oligocene age. The locality is in Tick Canyon, near Lang, Los Angeles Co., Calif. The minerals in the basalt locality is to the best of my knowledge and belief, unmentioned in the literature though they are known to some collectors."

The minerals occur as tiny colorless xls in a reddish-brown amygdaloidal basalt.

W. S. C. Stevens, 910 Cambridge Ave., Menlo Park, Calif., also sends in an interesting item as follows:

"On page 569, Nov-Dec., 1949, R & M, attention was called to a ledge of jasper on the shore of San Francisco Bay. This place is locally known as Coyote Point and is in San Mateo City, San Mateo Co., Calif. The border around the fireplace in my living room is made of jasper from this locality with alternate slabs of green chalcedony. The slabs are from 15 to 30 square inches in size. I am sending you some slabs of this jasper—Nos. 1 and 2 are like the ones in my fireplace—and at the time I gathered them one could pick up pieces on the beach weighing from a few pounds up to several hundred. Since then the city of San Mateo has dredged out a yacht harbor (south of the ledge) and filled in the beach parking space covering it several feet and for this reason it is now difficult to find very much at this time. The ledge itself (20 to 30 feet high) is nearly all yellow like slab No. 3 and still furnishes plenty of nice jasper.

"The green chalcedony is from Marin County, north of San Francisco. It was picked up on a sma'l beach, approached by a dirt road off the Manzanita-Bolinas Road, about 6 miles from Manzanita on highway 101.

"There is a great variety of jaspers and agates within a 50 mile radius of San Francisco and I think somebody should write them up for R & M."

Nos. 1 and 2 are dark reddish jaspers which had been picked up as drift ma-

terial on the beach. No. 3 is an attractive yellow jasper which comes from the ledge (Coyote Point). The chalcedony from Marin County is a beautiful dark green specimen.

COLORADO—W. C. Minor, Box 62, Fruita, Colo., donates the following item:

"I am taking the liberty of sending you a package containing four specimens of black petrified wood. This is some material that I found last winter in the high desert country east of Whitewater in Mesa Co., Colo.

"The outside of this type of wood is a dirty tan or grey, not at all attractive, usually this rind is very thin, though, and the inside is a solid jet black. Some pieces, however, are brown or gray all through. I have sent samples of the material to a number of gem cutters. All agree that it takes a beautiful polish. One cutter in California writes that it is the finest black wood that he ever worked with."

The material received are really nice specimens and any Eastern collector would be glad to add them to his collection.

CONNECTICUT—Paul Bock, I Oak St., Willimantic, Conn., informs us that nice feldspar xls are still available at the old abandoned Delude pegmatite quarry in his city. This quarry, located on Quarry Street (near the hospital) in Willimantic, was abandoned 20 years ago. In old reports the working was known as the Larrabee quarry.

DELAWARE—Kaolin has been dug for pottery from a large deposit at Hockessin, New Castle Co., Del.

FLORIDA—For the following item our thanks are extended to W. H. Hayes, 35 22nd St., Irvington 11, N. J.

"Having recently completed a trip through the Southern States, including Florida, I have an item which seems to be appropriate for the 'World News on Mineral Occurrences' as it may be helpful to any interested collector going through central Florida.

"As you probably know, rocks in Florida are scarce items, however, there is one section which is quite prolific in rocks and native ones at that. The section I speak of is along Route U. S. 301 south of Ocala. All along the road here and there are piles of rocks which are the refuse from excavations for ditches, bridges, etc. This rock is a silicified limestone of a dull white and light brown color, and in it may be found perfect fossil shells of several varieties, impure chalcedony, and cavities containing drusy quartz crystals which are brilliant and which fluoresce yellow under a long wave U. V. lamp, and are phosphorescent as well.

"There is plenty of this material available and there may be other interesting species which a collector might discover by spending more time in the rock dumps than I did."

GEORGIA—Mrs. Louis M. Young, of Clayton, Ga., sent to the Georgia Geological Survey (Atlanta, Ga.), an interesting specimen of amazonstone from Rabun County. This is the first true amazonstone believed to be found thus far in Georgia. It was obtained from an old mica mine about 7 miles from Clayton, and may be reached by way of the Pine Mountain Road. It is on the farm of Mr. Joe Speed, which is about ½ mile from the highway. —Item from the Georgia Mineral Society News Letter, May-June, 1951, p. 87 (Dr. A. S. Furcron, Editor, 425 State Capitol, Atlanta 3, Ga.)

IDAHO—Earl Stokes and G. Elmo Shoup of Salmon, Idaho, are developing by caterpillar bulldozer stripping, their kyanite property 5 miles west of Salmon, Lemhi Co. They are uncovering some beautiful bluish veins of kyanite. It is suspected that they may uncover some beryl near the kyanite veins.

Two nice samples of the bluish kyanite were sent R & M by Mr. Shoup whose address is Box 756, Salmon, Idaho.

ILLINOIS—A beautiful specimen has been received from Arch Nisbet, 3218 McLean Avenue, Chicago 47, Ill. It consists of pale amber barite xls perched on top of some deep purple fluorite xls, and the specimen comes from the famous fluorite mines of Cave-in-Rock, Hardin Co., Ill.

INDIANA—Two small but nice specimens of brownish petrified wood from Hanover, Jefferson Co., Ind., have been sent R & M by Rev. John E. Sparks, 106 W. Woodbury St., Danville, Ill. A letter from Rev. Sparks, dated April 16, 1951, carries the following information:

"The wood is found near Hanover, Indiana. Dr. Wickwire, Professor of Geology at Hanover College, will be glad to direct anyone to the best locations. Some of the farmers in southern Indiana use the logs for fence posts!"

IOWA—A number of tiny, loose, dark gray fossils, known as fusulinas, have been received from Amel F. Priest, Peru, Iowa. These fossils, which look like grains of oats, come from a limestone quarry in Winterset, Madison Co., Iowa.

KANSAS—R. L. Sylvester, 154 Parkside Ave., Syracuse 7, N. Y., has in his collection a nice geode from Udall, Cowley Co., Kans. The geode is lined with buff-colored drusy calcite xls which fluoresce and phosphoresce bluish under the Mineralight.

KENTUCKY—Russell P. MacFall, 630 Greenleaf Ave., Wilmette, Ill., has donated to R & M an unusually nice specimen consisting of colorless fluorite with slender metallic inclusions of marcasite. The locality is Mundy's Landing, Ky.

LOUISIANA—There is a large limestone quarry near Alexandria, Rapides Parish, La. We hope some reader will visit it soon and will report on what minerals occur in it.

MAINE—Dr. L. W. Carpenter, Limerick, Maine, reports that two additional minerals are to be added to the list of those occurring in the Limerick-Cornish vesuvianite area in northern York County, Maine. See his article on the area (Re-Examination of an Old Maine Locality, R & M, March-April, 1951, pp. 156-158). In his letter of June 5, 1951, Dr. Carpenter writes:

"At the time I sent my article, I did not mention titanite among the minerals found in the Limerick-Cornish vesuvianite area because I had not then identified it. It is there and I might mention also that purpurite was forgotten entirely."

MARYLAND—A letter dated April 22, 1951, was received from Billy Laughlin, Clinton, Md., containing this interesting item:

"I am sending you a few specimens from a road cut near here. Among them are 3 gypsum clusters, a concretion, some fossil shark's teeth, and a few small fossil's. I found about 35 clusters today, also a small chalcedony pebble. These specimens were all found in a road cut about 10 miles south of the District of Columbia."

The gypsum clusters were dark gray xls; the concretion was dark brown limonite, the shark's teeth were lustrous, grayish and of nice size; and the fossils were a flat shell and 2 small unknowns. Clinton is in Prince Georges Co., about 10 miles south of Washington, D. C.

MASSACHUSETTS — Beautiful specimens of epidote, as dark green xls on prehnite, are found in Lane's trap rock quarries near Westfield, Hampden Co., Mass.

MICHIGAN—Beautiful specimens of goethite, in brownish radiated masses, are found in the Burt iron mine at Ishpeming, Marquette Co., Mich.

MINNESOTA—A nice reddish banded agate pebble from near Two Harbors, Lake Co., Minn., was donated recently to R & M by Russell P. MacFall, 630 Greenleaf Avenue., Wilmette, Ill.

MISSISSIPPI—Near Eastport landing on the Tennessee River, in Tishomongo Co., Miss., is a deposit of white very finely pulverulent silica, or tripoli.

MISSOURI—James Skeens, Rt. 1, New London, Iowa, has a farm in Clark Co., Mo., (about a mile over in Missouri from Farmington, Iowa). On this farm is an occurrence of friable smoky quartz containing tiny lustrous grains of pyrite.

MONTANA—Nice specimens of xline galena associated with pyrite, chalcopyrite

and quartz, have been found at Rimini, Lewis & Clark Co., Mont.

NEBRASKA — Bluish-gray translucent chalcedony is found about 1½ mile east of Orella, Sioux Co., Nebr.

NEVADA—Nicely xled native copper has been found in the Empire-Nevada mine at Yerington, Lyon Co., Nev.

NEW HAMPSHIRE—About the finest fluorescent autunite in America is found at the Ruggles feldspar mine at Grafton, Grafton Co., N. H. The autunite which fluoresces green occurs as bright green scales and crystals on feldspar and other minerals.

NEW JERSEY—A small dark brown mass of lignite has been donated to R & M by John S. Albanese, P. O. Box 536, Newark 1, N. J. The locality for the lignite is So. Broad St., Newark, Essex Co., N. J.

NEW MEXICO—Fine museum specimens of galena have been found in the mines at Fremont and Lordsburg, Hidalgo, Co., N. Mex.

NEW YORK—In the zinc mines at Balmat, St. Lawrence Co., N. Y., black xline ilvaite occurs with hematite, garnet, and other minerals.

NORTH CAROLINA—Hiddenite, the greenish variety of spodumene which when in transparent crystals makes very fine gems, was first found in Alexander Co., N. C., at a little community now called Hiddenite (after the gem). The mine, worked chiefly for the gem, is now a water-filled hole but the gem mineral turns up occasionally in dealers establishments—when old collections have been purchased.

NORTH DAKOTA—Brownish agate pebbles occur along the west bank of Knife River, north of Hebron, in southwestern Mercer Co., N. D.

OHIO—E. H. Sarles, 2026 Elm Avenue., Norwood 12, Ohio, has donated to R & M a nice little halotrichite (white, silky fibrous) associated with yellow melanterite. The locality for the specimen is Copperas Mt., Ross Co., Ohio.

OKLAHOMA — Near Winnview, Blaine Co., Okla., small nuggets of native copper have been found in clay shale.

OREGON—Nice specimens of moss agate have been found at Eagle Point, Jackson Co., Ore.

PENNSYLVANIA—A find of extraordinary interest has been made recently by Leonard J. Duersmith, 405 Poplar St., Columbia, Pa., at a limestone quarry near Marietta, Pa. The find is a golden transparent calcite occurring in small to large xls. A beautiful 2½ x 3" section (almost 1" thick) was sent R & M by Mr. Duersmith. This is by far the finest golden calcite we ever saw from the East and compares favorably with those found in the Joplin, Mo., area.

In his letter of June 22, 1951, Mr. Duersmith writes:

"I am sending you under separate cover my latest find. The mineral was found in a pocket at a limestone quarry near Marietta, Pa. I found 200 pounds of the calcite, of which about 80 pounds is almost identical with the one sent you, but smaller pieces. One distorted crystal weighs 15 pounds. Do you know of any other occurrence that has the color and clarity of this find?"

We are very sure "Duersmith Spar" will become very poplar, once collectors discover the fine qualities of this golden calcite.

We are indebted to James B. Irvine, Wayland Road, RD. 1, Collegeville, Pa., for the following interesting item:

"The Evansburg Boy Scouts, in an effort to establish a good group of local minerals for their big exhibit this October, have scoured the neighborhood for good hunting spots. They have found two. One is a plowed field near Evansburg in which they have found over 50 quartz and amethyst crystals ranging from 1 to 4 inches in length and from ⅜" to 1½" in diameter. All are left handed crystals. In some cases the color is very light and

in other cases it is a rich purple. Most of the crystals are crazed *inside*. There is one doubly terminated amethyst 1¼ x ½ inch which is clear and a fairly good purple. There is one very good purple crystal with a drusy surface. It is 3¾ x 1¼ inches. Some are concentrically banded with clear and cream colored quartz and no purple. Many pieces of amethystine quartz showing only one or more faces have been found.

"The other field they have found is near Creamery, Pa. This one is characterized by clusters of small perfectly clear crystals up to 1 inch in length. They have found dozens of small (¼ to ¼ inch) clear doubly terminated crystals."

Evansburg and Creamery are both in Montgomery County, Pa.

RHODE ISLAND—Titanite has been found in the rocks of Conanicut Island, Newport Co., R. I.

SOUTH CAROLINA—Cassiterite occurs in pegmatite near Gaffney, Cherokee Co., S. C.

SOUTH DAKOTA—Mrs. Edwin P. Olson, Box 425, Beresford, S. D., has been finding some very nice gypsum (selenite) xls in Bruley State Park, 10 miles south of her home. The crystals are loose, colorless, and vary from 1 up to 4 inches and more in length. Under the Mineralight the crystals fluoresce green and have a bluish phosphorescence. Bruley Park is in Union County and the locality in the park is on highway 77 where the crystals are found embedded in the soft rock bordering the highway.

TENNESSEE—Barite has been mined at Sweetwater, Monroe Co., Tenn., where it is found chiefly in white or gray masses and often associated with calcite, fluorite, sphalerite, and galena.

TEXAS—We have had some interesting correspondence with Hugh Leiper, 1700 Rabb Road, Austin, Texas, relative to the blue topaz locality at Streeter, Mason Co., Texas. In his letter of February 28, 1951, he writes:

"We have recently made a re-find of some fine blue topaz here in Texas, known since 1894, but a new location came to light last year, and we have found some very fine crystals of good blue color up to 110 grams in size, and in color which many say is equal to the best of the Brazilian.

"I am Chairman of the Faceter's Corner of the Austin Gem and Mineral Society, a rapidly growing group of some 120 members. At the present time I am cutting a large blue topaz of about 50 carats which is practically flawless, which I am naming "The Eye of Texas." It is a marquise shape, 1⅛" x ⅝"—no accurate measurements as to weight yet, as it is still on the lap."

A paragraph in his letter of March 14th, 1951, reads:

"I have your letter of March 7th with special regard to the topaz localities in Mason County, Texas. The material we are securing is coming from the Streeter locality, which source is of course not new, having been known since 1894. However, the particular stream bed which we are now working has been developed in recent years, especially in 1950."

A most interesting article on the locality, titled "Texas Blue Topaz", and written by Mr. Leiper, appears in the June, 1951, issue of THE LAPIDARY JOURNAL (Lelande Quick, Editor, Palm Desert, Calif.) The article covers 5 pages and has 5 illustrations, including "The Eye of Texas" which in its finished state weighs 34.63 carats. The topaz occurs as pebbles in a stream bed near Streeter.

UTAH—Celestite, as pale grayish-blue platy xls in reddish geodes, occurs 12 miles north of Hanksville, Wayne Co., Utah. A nice specimen has been sent R & M by Dr. A. L. Inglesby, Torrey, Utah.

VERMONT—Galena has been found at Brandon, Rutland Co., Vt., in coarse cleavable masses in massive smoky quartz.

VIRGINIA — The reopened marble quarry at Mountville, Loudoun Co., Va., is still producing interesting minerals, if we are to judge by the 3 handsome specimens sent us recently by Joel Shappirio,

4811 17th St., N. W., Washington 11, D. C. One specimen consists of dark green clinochlore xls on grayish green serpentine; another consists of a one inch magnetite vein in milky quartz; and the last is a marble-serpentine matrix in which are imbedded a number of greenish tremolite xls, some radiating. This quarry, now being worked by the Virginia Lime and Marble Co., has been reported in the Sept-Oct, 1950, R & M, p. 502 and Nov-Dec., 1950, p. 603.

From John S. Albanese, P. O. Box 536, Newark 1, N. J., comes the following item:

"Under separate cover I am sending you two specimens of altered galena from a very old American locality—West Fork, Virginia. These were collected more than 100 years ago. The galena is silver bearing. They are being sent with my compliments."

We thought we knew our old American localities but West Fork, Va., is unknown to us. Try as we would, we could not locate West Fork in any of the old mineralogies, atlases, etc. Can any reader help us out? The label with one of the specimens gives the locality as Warm Spring Creek, West Fork, Va.

WASHINGTON—Cassiterite occurs in pegmatite veins at Silver Hill, in Spokane Co., (12 miles southeast of Spokane) and has been mined.

WEST VIRGINIA—Barite occurs on the north slope of East River Mountain in Mercer Co., W. Va.

WISCONSIN—Nice red jasper pebbles occur around Eau Claire, Eau Claire Co., Wisc.

WYOMING — Excellent pebbles of moss agate occur at Medicine Bow, Carbon Co., Wyoming.

ALASKA—Frank H. Waskey, Dillingham, Alaska, sends in the following item:

"The enclosed little box contains sluice box concentrates from the Bismuth property of O. A. Margraf on Charley Creek, Sinrock River, Seward Peninsula, Alaska. It contains bismuth, bismuthinite, magnetite, stibnite, smoky quartz, etc."

Small to tiny fragments but all interesting.

ANGOLA—Bradley Johnson, 45 Austin Avenue, Asheville, N. C., has sent R & M a large number of trimmed mica from many countries of the world. A number of small but nice sheets come from Angola in Africa which proves that this Portuguese colony has commercial deposits of good muscovite. Unfortunately the locality for the Angola muscovite is not known.

ARGENTINA—Large sheets of dark colored muscovite from Catamarca Province, Argentina, were also sent R & M by Mr. Bradley.

AUSTRALIA—Diamonds occur in alluvial deposits at Mudgee, N. S. W., Australia.

CANADA—Steel gray fibrous masses of zinkenite have been found on Carbon Hill, Wheaton District, Yukon Territory, Canada.

DENMARK—Denmark is one of the few flint-exporting countries in the world, (France is the other) has the only moler earth deposits in the world, and has clay suitable for the manufacture of bricks and fine porcelains. Stone quarries supply all the stone needed (virtually all Danish granite quarries are on the island of Bornholm), and lime and chalk are readily available. Saline deposits have been found, and the possibility of local production is being studied.

The only place where moler earth is known to be found in the world is in the northern part of the Jutland peninsula around the Limfjord. This material is very similar to kieselguhr, and moler bricks are used for insulation in the building trade. Official Danish statistics do not show the annual production of crude moler, which is estimated by the trade at 100,000 to 110,000 metric tons.—U. S. Bureau of Mines MINERAL TRADE NOTES, March, 1951, pp. 40, 48, 51, 60.

ENGLAND—Nice xled epidote occurs near Keswick, Cumberland, England.

FRANCE—Beautiful rose-red fluorite on smoky quartz associated with titanite and adularia, are found at Chamonix, Savoy, France.

GERMANY—Nice xls of iolite have been found at Bodenmais, Bavaria, Germany.

HAWAII—The following letter was received recently from E. H. Anderson, Jr., 2852 Kakawai Street, Honolulu, Hawaii:

"I have subscribed for R & M for the past two years and have read the magazine with much interest. I, however, have not seen an article on Hawaiian gems. There is much interest here as I have had numerous requests to send Hawaiian minerals, fossils and implements to collectors in the United States. They have also asked for information on the Hawaiian Islands and the gems which are present here.

"Unfortunately the Islands do not possess precious stones. Along the semi-precious line however we do have some beautiful jasper, agate, bloodstone, jasp-agate, augite xls, quartz xls, travertine, obsidian, topaz, milk opal, and so on.

"Gem hunting and gem cutting are rather new in Hawaii and I have tried to stimulate interest in every way. I am at present teaching an evening class at the McKinley School for Adults and have many interested students who go out and find their stones and bring to the class to be cut and polished.

"I was planning to write an article with local color hitting on the gem field as the main topic. A reply from you, one way or the other, would be greatly appreciated."

We would be delighted to have an article on Hawaiian minerals and do hope Mr. Anderson may see his way clear to prepare it.

HONDURAS—One of the countries of the world that is noted for precious opal is Honduras, but very little information seems to be available for collectors on the occurrence. Therefore the following letter from Jacob Bob, 2936 S. W. 16 Terrace, Maimi 34, Fla., is of more than passing interest. Mr. Bob has visited the opal fields in Honduras on a number of occasions and hopes to return in the near future. His letter follows:

"Opal in Honduras is found in the State of Gracias. There is, however, a Gracias a Dios, meaning "thank God", and this Gracias is the borderline of Honduras and Nicaragua. Opal is found also in the Department of Intibuca.

"Opals are found in several other departments of the country but they are not good enough for commercial use.

"I am planning to go back to Honduras, if I can find a good companion to go with me, and will stay at least six months looking for opals. The opals are there but the people are very superstitious, however, I make friends with them and so get along nicely. One good feature about Honduras is that parts of the country is from 4,000 to 5,000 feet above sea level, therefore the climate is wonderful.

"I expect my next trip to Honduras will be a most successful one and then—you will hear from me again."

INDIA—Nice specimens of thin transparent sheets of muscovite, sometimes enclosing magnetite, are found in the mica mines of Madras, India. Some very fine sheets have been sent us by Bradley Johnson, 45 Austin Avenue, Asheville, N. C.

IRELAND—Nice pyrite xls have been found at Kildrum and Goldenbridge, Co. Dublin, Ireland.

ITALY—Beautiful transparent specimens of obsidian are found in the Lipari Islands, Italy.

JAPAN—Clay Ledbetter, 2126 McKenzie Avenue, Waco, Texas, donated recently to R & M a beautiful round, gray granite paper-weight. The granite comes from Japan and was obtained by his son, Major William R. Ledbetter, who is stationed in that country. This granite is called "Mikageishi stone", meaning "suicide stone." It was taken from the steps of the former German Embassy in Tokyo; the Embassy was blown to pieces

during the war. It is believed that the granite originally came from the granite quarries on Shodo-shima (a large island in the Inland Sea) near Okayama, Honshu Island, Japan. Mr. Ledbetter made a number of paper-weights, from the large rough specimen sent him, one of which was sent R & M as mentioned above.

MADAGASCAR—Gemmy xls of scapolite (wernerite), lemon-yellow in color, are found at Balaboka, Madagascar. These when cut make fine gems.

MEXICO—Light green roughly xled fluorite (fluoresces blue under the Argon bulb) is found near the city of Guanajuato, Gto., Mexico.

NORWAY—Nice groups of smoky quartz xls with rock xls and calcite xls are often found in the silver mines at Kongsberg, Norway.

SCOTLAND—Native copper has been found in the trap rocks near Stirling, Stirlingshire, Scotland.

SWEDEN—Blue spinel xls are found in limestone at Aker, Sweden.

SWITZERLAND — Beautiful limpid selenite xls are found in the Bex salt mines Vaud, Switzerland.

UGANDA—John S. Albanese, P. O. Box 536, Newark 1, N. J., has donated two nice specimens of bismuthinite (in quartz) which come from Kigezi, Uganda, East Africa.

WALES—Native copper has been found imbedded in serpentine on the island of Anglesy, Wales.

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SOME ARKANSAS CAVES

By BYRON C. MARSHALL

204 Central Ave., Hot Springs National Park, Ark.

In reading the May-June, 1951 issue of ROCKS AND MINERALS, under ARKANSAS in WORLD NEWS ON MINERAL OCCURRENCES, I note you received a stalactite (calcite) from the Club House Cave, Ark., and state "Can any reader furnish the location of this cave?"

It happens that in my past I have done considerable exploration work in caves. To date, (though I have done practically no cave work in the last twelve years), I have the rare pleasure of exploring 184 different caves, 114 of these in northern Arkansas, clear across the state as far as the limestone section extends. Also 60 different caves in Missouri, across the southern part in the limestone section. Nine different caves in south-central Texas, between Austin and San Antonio. One cave in Kentucky, near Richmond. Some of these caves I have been to twice, several, or some even a number of times. Some of these caves are small, some medium, some large, and some very large. Several had never been explored before or in other cases only partly explored. A few were explored by me considerable distance but never reached the end, and I hoped to return later and finish the job, but never did. Of course this much cave work took a great deal of time and money. I have seen many wonderful things in the miles and miles I have gone underground, and some time I hope to write a book on this work. It would take a good sized book to describe it all. My main object at all times was the biological aspect of these caves, or namely their varied animal and even plant life. But, too, the marvelous cave formations were a constant wonder, and the geological aspect was always interesting. Too, the anthropological side of the question was given some thought, as some of these caves had attractive bluff entrances that were used by prehistoric Indians. Again some of these caves had historical interest —mined during the Civil War or used as army division quarters, as stables and even as hide outs. Again, some of these caves were in use by modern mountaineers some thirty years ago and more, as nice set-ups for spirits of moonshine, that the hill folks loved so well.

The cave you mention, Club House Cave, is undoubtedly the one, or really the TWO, about one-half mile north of Cushman, Independence County, Arkansas. I know of no other cave by this name, and as already stated have covered practically all the cave territory of Arkansas, and spent a number of years caving around, and inquiring about caves, till at times I felt myself quite a cave-man, and that the caves and myself had much in common. I mention two caves. These are near together, and one is known as the Little Club House Cave, and the other as the Big Club House Cave or the Charlie Martin Cave. I might add that very near is also another cave called the Club House Spring Cave. I have been to these caves two or three different times, but my best records are for the trip I made there October 18, 1936. The Club House Spring Cave is small and one can only crawl in about 180 feet. A spring branch flows out of this cave. About a quarter of a mile up an intersecting hollow (valley), west of the Club House Spring Cave, on the north side of the draw and near the top of the ridge, is the Little Club House Cave. This is a small cave and goes in only about 110 feet. It had at that time some small cave-coral formations on the walls that were interesting and a few common types of stalactites. About two or three-hundred feet further up this draw, is the Big Club House Cave. As already stated, this cave is sometimes called the Charlie Martin Cave, because a man of that name dug into this cave since 1928 mining manganese ore. Thus one now (1936), enters through a tunnel with wooden braces, for several hundred feet, and with several branch tunnels, where mining of manganese was carried on. Then one comes to a very large space, as

may be known by the fact that here we descended by aid of a long large rope, a slope downward for 75 feet. All this of course is underground. This is the cave proper now and one goes several hundred feet in either direction of this passage, various places being quite large and again in places narrowing down to crawls. This cave is about one-half mile in extent and in many places has some nice cave formations. One thing that struck me with unusual interest, was the fact that in one place a bright orange substance of the consistency of soft putty, was precipitating from a point in the wall about six feet high slowly flowing down the wall. I took my knife blade and scraped off enough to fill an empty tobacco can. The United States National Museum authorities pronounced this limonite. After many weeks it hardened in the can and then looked more like limonite I had been used to seeing. There is much limonite in this section of Arkansas.

About a mile from the little mining town of Cushman, is another Cave called Blowing Cave. It has a beautiful large open entrance and is in a beautiful rugged natural setting. It was a natural amphitheater and here before the days of automobile and picture shows and other modern fads of entertainment, picnics, political speakings, and gatherings on Saturdays and Sundays were quite popular. Inside the amphitheater, the community built a large smooth wooden elevated dance platform, and boy, oh boy, how the music would ring aided by such wonderful acoustics. Many an old square dance took place there to the tune of fiddles and fiddlesticks. People came from miles around, brought their lunch and spent a happy day. Because the crowds used to congregate in this beautiful area of Cushman, the spring and caves that go by the name of CLUB HOUSE, were known as such. This community is an old one, considering it by the standard as western communities go, and considering that Arkansas is not much over a hundred years old as a state.

Within a radius of two or three miles are a few other caves. One very large. An interesting feature of this section, is that in some caves the formations (stalactites, stalagmites, cave-coral, etc.,) are gypsum and beautiful. In other caves these formations are calcite. In others the primary formation was calcite with an overlay of secondary gypsum. Some of the stalactites are fantastic in shape. Some are bulbs with a short or a long needle ending. Some are double bulbs. Some are thin flags or curtains. They (stalactites) all begin as a thin hollow tube, not unlike a soda fountain straw.

I mentioned manganese. The ore is of several kinds, though Psilomelane is the main one. It was first mined in 1849, and since 1891, has been mined to a considerable extent. The manganese section covers many miles and a part of several counties and is one of the chief such in the United States.

About the caves of Independence County, Arkansas, I should probably add that this section has a good many of them. I have explored 27 different caves in Independence County alone, and had heard of six more I never found time to get to. There is one cave in this county I would like to return to some time. In its one passage, we spent the best part of a day, where we went and went and kept on going and yet no end. There were no side passages to take up our time, and we lost no time, and the walking was unusually good, with no crawling, and we could make time. I sure would like to see the rest of this cave. A cave-man hates to be "stumped."

Twice Read—Then Filed!

Editor R & M:

I am enclosing $3.00 to renew my subscription for another year. I'd be lost without it now. I read each copy as soon as it arrives, then read it again when I have more time, then file it for future reference.

Mrs. John McCarty
Kansas City, Mo.

June 14, 1951

Must Have R & M!

Editor R & M:

Please renew my subscription another year. I could not be without your magazine.

Chester R. Snyder
Norristown, Penn.

June 11, 1951

THE SAND COLLECTOR

Conducted by PETER ZODAC, Peekskill, N. Y.

Due to the keen interest in sand, as evidenced by many of our readers, we believe a column devoted to this subject is in order. This column will be run regularly, if readers will support it with notes.

Quartz Sand From Indiana

We are indebted to Walter Reeves, Rt. 3, Greencastle, Ind., for 3 samples of fine grained quartz sand, each a different color (gray, buff, and reddish) and all from Fern Cliffs, Putnam Co., Ind. A letter from Mr. Reeves, dated June 12, 1951, reads as follows:

"I am sending you some sand from Fern Cliffs, 7 miles west of Greencastle. In horse and buggy days, Fern Cliffs was a beautiful place with towering sandstone cliffs of cream, buff, and pink colors. There was a deep narrow canyon where the sun scarcely ever shone, a lover's leap, fat man's misery, Devil's backbone, giant virgin trees and a clear sparkling stream ran at the foot of the cliffs. Then a glass company bought the tract, put in a switch from the nearby N. Y. C. R. R., installed a huge crusher and began blasting the cliffs, crushing the sandstone and shipping the sand to Terre Haute, Ind. After a number of years, they took out the crusher, stripped all the trees off the land, and abandoned the project.

"Today, Fern Cliffs, which should have been a state park, is a place of desolation, a place of moulding timbers, weeds and bushes.

"This sandstone formation extends about half-way across Indiana along its western border and marks the shore line of an ancient sea."

Black Sand From Portuguese East Africa

This sand comes from the "Old" beach at Chai Chai, Inhambane, Portuguese East Africa (Mozambique). It is a fine grained black (and gray) sand consisting chiefly of magnetite, (black), quartz (colorless, white, reddish), garnet (red), etc. A nice sample was donated to R & M by Hugh A. Ford, 110 Wall St., New York 5, N. Y., who collected it personally in 1931.

Gold-Bearing Sand From Indiana

We have heard of gold-bearing sands in Indiana but never saw any of it until a few weeks ago when the Rev. John E. Sparks, 106 W. Woodbury St., Danville, Ill., sent for examination, a small vialful which he panned last summer. The sand was black in color due to the preponderance of magnetite. It contained also: garnet (red), quartz (colorless) and at least 4 tiny gold nuggets.

A paragraph in Rev. Sparks' letter of April 16, 1951, reads:

"The contents of the vial came from a small creek near Bean Blossom (Brown Co.), Indiana. Would you please return it? It is all I have left of a small portion I panned one afternoon last summer. During the Depression several families made their living from the small amount of gold they were able to recover. They averaged $1.00 a day. Directions to the best creeks can be obtained from my father, Dr. L. M. Sparks, Director of Purdue Extension Center at Columbus, Indiana."

Pyrite Sand From Missouri

A fine grained gray sand consisting chiefly of smoky quartz and lots of tiny pyrite grains and coming from the James Skeens farm in Clark County, Mo. (about 1 mile over in Missouri from Farmington, Iowa) was recently donated by Mr. Skeens whose mailing address is Rt. 1, New London, Iowa.

Quartz Sand From Louisiana

Lovett Word, Box 1129, Leesville, La., has sent R & M 6 samples of quartz sand, all from the vicinity of Anacoco, Vernon Parish, La. The samples came from the top of sand hills, a ravine, road cut, and from the bed of a 200 foot wide creek. The sand is all gray in color, 2 are fine grained, 2 are medium grained, and 2 are coarse grained. The sand is all quartz

(chiefly colorless and much of it is transparent), some is brownish, whitish, etc. In 3 of the samples bluish-gray chalcedony was also present; in the sample from the top of a sand hill 427 feet above sea level, the chalcedony is of the so called "moonstone" variety.

A note from Mr. Word informs us that the few Indians who used to live in the little town said the name *Anacoco* means "Big Smoke."

Beach Sand From Peru

Eugene Christin, Apartado 828, Lima, Peru, has very kindly sent R & M two samples of sand from his country. A letter from him, dated February 27, 1951, had these interesting paragraphs:

"Today I am mailing you by registered mail two samples of sand. One sample comes from our best beach near Lima, called Playa Herradura (Horseshoe Beach). It is just outside of Chorrillos, the last suburb outside of Lima on the southern coast.

"The other sample is from Playa Punta Hermosa (Beautiful Point Beach). At kilometer 45 (27.9 miles) from the Plaza de Armas, in Lima, heading south, you take a dirt road to your right and there is Playa Punta Hermosa. When we looked at the beach we saw a lot of black dots in the sand, so we made our picnic closer to the shore where the sand was coarse. This all happened a few days before your letter arrived. Idly digging a hole in the sand, I was surprised to find that 12 inches down the sand was black, so I dug out a lot and put it in a newspaper and some of this is sent you. It is my guess that the black sand is iron."

The first sand, from Playa Herradura, is fine grained, dark gray in color, and consists chiefly of quartz (colorless, brownish, white), with a few black flakes of biotite, some white flakes of muscovite, and a little magnetite (black).

The sand from Playa Punta Hermosa, is medium grained, gray and black in color (about 50-50) and consists of nice rounded grains of magnetite (black), quartz (clear, smoky, brownish), and lots of milky-white rounded grains of coral. The large dots seen on the beach may have been magnetite.

Glacial Sand From Oronoque, Conn.

From Frederic C. Booth, Plainfield, Mass., comes a small sample of glacial sand from Oronoque, Conn. The sand is dark gray in color and is a mixture of fine grained and coarse grained particles. It consists chiefly of quartz (mostly clear and smoky but milky and iron-stained also occur), red garnet (small amount), magnetite, muscovite (lots of it), etc.

A letter from Mr. Booth, dated June 19, 1951, reads:

"I am sending you a sample of sand from the glaciolacustrine deposits in the lower Housatonic Valley at Oronoque (Stratford), Conn., where I once owned a farm. The sand has thermoluminescent particles, perhaps feldspar (none noted in sample sent R & M)."

Sand Dredged From Tampa Bay, Fla.

In an assortment of sands received recently from E. H Sarles, 2026 Elm Ave., Norwood 12, Ohio, was a fine grained white sand (all colorless quartz) which was dredged out of Tampa Bay at St. Petersburg, Fla. Small shells, probably of Pliocene age, occurs with the sand.

Limestone Sand From Cincinnati, Ohio

Another sample sent by Mr. Sarles of Norwood, Ohio, is a coarse dark gray sand consisting almost entirely of grayish limestone grains. Some quartz (colorless and white) is also present. The sand comes from a gravel pit in Cincinnati, Ohio.

Beach Sand From Hong Kong

Clayton R. Gibson, USS Albuquerque, c/o FPO, San Francisco, Calif., delighted the conductor of this department, with a small container of beach sand from Hong Kong. The sand is grayish in color, fine grained, and consists chiefly of white coral with a little colorless quartz. Hong Kong is a British Island possession lying off the S. E. coast of China. It is about 9 miles long and 4 wide. A letter from Mr. Gibson informs us that the sand was collected on Dec. 17, 1950, at Repulse Bay beach on the island of Hong Kong.

Article On Sand Collecting

Ford E. Wilson. 11844 S. E. Pine St., Portland 16, Ore., had an interesting article titled "The Collecting of Sands" in the May, 1951, issue of GEOLOGICAL NEWS LETTER, the official publication of the Geological Society of the Oregon Country (703 Times Building, Portland 4, Ore.) Mr. Wilson is a subscriber for R & M but this is the first time we knew he is interested in sands.

Sand Containers Donated

Walter Herrmann, 409 Mercer Avenue, River Edge, N. J., has very kindly donated a large number of plastic containers which are very suitable for sand. In his letter of April 20, 1951, he writes:

"I am a fellow rockhound—a beginner—and watch with interest the growth in response to your column in ROCKS AND MINERALS about sand collecting and find it very educational; am getting warmed up to it too.

"In my everyday activities I come across some small plastic containers—discards (not for sale) and wondered whether they should be of any use to you. They accumulate from time to time and I just hate to waste anything if it can be useful to someone. I am sending you a few.

"Maybe soon I'll be joining the ranks of sand collectors, and can help adding to your cause."

HISTORIC LANE YIELDS BASANITE PEBBLES

BY PETER ZODAC

About 4 miles north of Peekskill, in Garrison, N. Y., on the property of the Capuchin Fathers (a Catholic Order) is a historic lane. The lane is a picturesque dirt road, beginning at U. S. 9D and running west, on a down grade, for about a mile to terminate at the Hudson River and the N. Y. C. R. R.

At the beginning of this land is a historic marker which reads:

ARNOLD'S FLIGHT
at Beverly Dock, at the foot of this lane, Arnold disclosed as a traitor, fled by boat to the British Ship Vulture, off Croton Point.
State Education Department 1932

The lane is strewn with pebbles among which are many black basanites (a variety of quartz). The basanite varies from ½ to 2 inches in diameter but the smaller the pebble the better is its quality. Red jasper pebbles are also to be found. Black, also red, pebbles of slate are common in the lane but their softness and rough feel easily betray their presence.

At the end of the lane was once a noted dock (Beverly Dock) where boats used to load or unload produce, passengers, etc. This dock has long since passed out of existence and no trace of it now remains. The main line of the New York Central Railroad now runs, apparently, over the site of the former busy dock.

About a mile south of Beverly Dock was once a noted serpentine outcrop, known as "Cotton Rock," due to veins of silky amianthus in it. It, too, is said to have been obliterated by the N. Y. C. R. R. but I have never tried to relocate it nor have I ever seen specimens from the locality. Someday I will make a special trip to the area to see if any remnants of the former outcrop may be present.

Quarry Etiquette

I would like to see an article on "Quarry Etiquette" to impress on the collectors how their actions may make it difficult or impossible for future collectors to gain admittance. For example, one collector was found recently hanging with his hand caught in a pocket at a quarry. He had fainted and his wife frantically calling for help. His carelessness with a large pry bar had loosened the overhanging rocks. A bit of care or horse sense could have prevented this.

Another group of collectors left so many papers and garbage from their field trip that the quarry owner was very reluctant to admit others.

Cal O. Gettings
2001 Starr Avenue
Toledo 5, Ohio

MINERAL SHOPPERS' GUIDE

Conducted by CHARLES A. THOMAS
706 Church Street, Royersford, Pa.

Although our nose will be kept fairly close to the grindstone, we salute the many mineral collectors, who will be scurrying over the country these summery days. A suggestion is in order, directed to those so fortunate to be able to visit the far off places and delve into strange mines, quarries, ledges and whatever. Well-planned trips usually include time and sidetrip mileage for visiting mineral collectors and dealers. No matter how hot, how wet, how nice the weather, it is always a thrill to stop by and visit a well-known dealer, especially those who advertise to you in ROCKS AND MINERALS.

Dealers are swell people. Almost without fail, they are dealers for the love of the game and, invariably, they are collectors extraordinary who know how to gather the finest material which they subsequently present to readers of ROCKS AND MINERALS through their ads. It is fun to try to discover top quality specimens in the field. We love to do this too, but how many trips are a total loss in this respect? The better dealers have material which more often comes from the mines and private prospects, not dump catch-as-catch-can or battered specimens. See the nearest dealer first, while in the area of the moment.

If we were making one of the many extended tours and found ourselves in Arizona we would be sure to visit E. E. Michael in Prescott and select some of his superb Yavapai country minerals. They are choice Westerns, not to be found in the dumps. Mesa, Arizona? Gritner's is a friendly establishment operated by a know-how collector. His specials have been described in this department. If you are a cutter, stop by in the lovely City of Phoenix and look up the Kane Lapidary and Supply. They are proud of their material and will be so glad you stopped in. Camp Verde and the Squaw Peak Mine is worth a side trip, where you may select fine specimens of molybdenite and others, fresh from the mine. Tucson and the Mission Curio Mart is a must. Make room in your car for specimens and items of interest from this up-to-date shop.

Perhaps you will be in California where there is so much to see and do. There are more dealers to the county than in any other State. Here are a few we wouldn't miss. Carry a few issues of ROCKS AND MINERALS for referring to the ads for the addresses. Minerals Unlimited are at your service in Berkeley. Grieger's in Pasadena. Plummer's in San Diego (don't miss). Gordon's and the Elliott Gem Shop in Long Beach are noted for gem and mineral supplies. See the latest in Ultra-Violet lamps and specimens at Ultra-Violet Products, Inc., in South Pasadena. Then there is W. Scott Lewis, no finer collectors' collector in Hollywood. The Coast Minerals in El Monte will be so glad if you stop in for just a little while. In Chatsworth is the Valley Art Shoppe, of great interest to mineral collectors. You will be in L. A., of course, so by all means stop in to see the Bradley's or your trip will not be complete. You will learn so much from these visits! A first class gem dealer is also in L. A.—E. R. Swoboda. In the same city are the R & B Art Craft Co., and Juchem Brothers. At Monrovia is Burminco and in Fall River Mills is W. H. Walker.

Colorado has its J. E. Byron, in Boulder. A trip to Boulder without stopping in to see Mr. Byron's superb collection and for sale items would be like going to the shore without looking at the ocean. At Englewood are Arthur and Lucille Sanger while in Lajunta is the Thunderbird Hobby Shop.

If Nevada is on your trip list, one of the many places to visit should be the Nevada Turquoise Mines, Inc., at Mina. Here you will see superb American turquoise, a fine assembly of precious opals,

small and large, and the beautiful variscite for those who like to cut and polish a really gorgeous mineral. The unusual howardite is also in stock.

Oregon is a wonderful place for agate. If Portland is on your route, stop in to see the Mintons before looking for agates. The Mintons know the agate game. Consult them and buy their book on the "How and the Why of Picking Agates." Then there is V. D. Hill in Salem, a successful dealer if there ever was one. Mr. Hill has items of interest for every phase of the hobby. It is difficult to think of anything that he may not have. Therefore, a visit to Mr. Hill should be most interesting to the traveling collector.

Wyoming tourists should most certainly look up Mr. B. J. Keys in Worland before going too far. Fifty years of collecting in Wyoming has given Mr. Keys a very broad knowledge of his State, so far as minerals are concerned. He is especially proud of his stock of dinosaur gizzard stones and prehistoric bird gizzard stones (gastroliths). He has his own boneyard of petrified dinosaur bone sections. His collection and for-sale stock of beautiful fluorescent Wyoming minerals and others is worth seeing. Mr. Keys sent the M.S.G. a most wonderful package containing naturally polished gastroliths . . . beautiful specimens; a nice specimen of dinosaur bone, heavy with petrification; several excellent and choice fluorescent chalcedonies with the famous bright Wyoming yellow and green fluorescence and six pieces of very brilliant pink fluorescent calcite specimens which show from two to three vivid colors under the SL. 2537 short wave Mineralight. Lack of space prevents more mention of Mr. Keys mineralogical successes at this time. Visit him, by all means while you are in Wyoming.

South Dakota is a wonderful State in which to travel and collect minerals. Away back in 1924, we found carnelian in excellent color, dahlite spheres and numerous fossils just a few feet from the edge of the trail, the route south and about one and one-half hours auto drive from Custer. The exact locality is not now known. However, if we were to visit the area again, we would not fail to stop in at the Cycad Agate Shop, in Custer, and select some of the region's fine material.

Utah is also a wonderful place for the mineral collector. Oliver A. Mason is located in Ogden. Petrified sabertoothed tiger bone, dinosaur bone, petrified wood and many other Utah specimens are in stock at Mason's. Look up Torrey and head for this City for a visit to A. L. Inglesby. All of the colorful Utah minerals are in stock. The shelves of the M. S. G. contain lovely and rare coppers from the Inglesby area. Microscopists would do well to pay him a visit before trying to locate the various mines and dumps, where one could find specimen material, but probably will not see anything like those in Mr. Inglesby's stock. Do not miss visiting W. T. Rogers if you are anywhere near Salt Lake City. His advertised specimens are so well crystallized and so beautiful.

Should you visit Kansas City, Mo., by all means call on Ralph E. Mueller and Son.

Perhaps you will find that your tour will include El Paso, Texas, where you should take the time to see Dave Harris' sliced agates and the Kodachrome micrographs which are so lovely to see and so reasonable in price. Mr. Harris has sent us another set of sample slides which are even better than the first set which I did not think possible. These slides are worth more than twice the amount asked. Words such as 'superb' and 'gorgeous' do not adequately describe Mr. Harris' material and pictures. In El Paso is also the Southern Gem and Mineral Co.

Mississippi a mineral State? Most assuredly. We would not miss stopping in to see Waldo E. Ford's collection and stock of agates. He is located by his address, Wesson, Rt. 2.

Florida is usually considered a wintertime vacation land, but every year, more and more tourists visit this grand State in the Summer months. It is fast becoming mineral conscious The Henry B. Graves Company invites you to visit with them and view their stock of things dear to the heart of mineral collectors. See

their ads (in past issues of R & M) and also the general invitation extended by the Miami Mineral and Gem Society, to visit with them at their meetings.

Since we cannot know your starting point, we seem to be jumping you all over the country as if you were traveling via a jet-propelled magic carpet. If you find yourselves in Illinois, near Lombard, by all means stop in to see Mr. A. J. Alessi and his superb stock of fluorites. As if this were not enough, he has other most interesting specimens of very choice quality for your perusal and selection. As we have said many times, one just does not find such specimens on the dumps of mines in any case. Chicago has its Tom Roberts Rock Shop. Mr. Roberts is a member of the American Gem and Mineral Suppliers Association and is a top-notch dealer in things mineralogical. Gem-masters and Mineralights are not just a sideline with Tom Roberts. He is the proprietor of the World's Antique Mart.

If in Ohio, do not rush through. There are some very excellent collecting areas and some expert dealers to visit. At Warren, is B. M. Brehm of cabochon cutting fame. See the results of his method and his equipment. In Springfield, Mr. James W. Riley has a stock of hundreds of pounds of fine cutting agate personally collected by him. He may be away prospecting for more, but his wife will show you the results of his last expedition. Toledo has its Cal O. Gettings. If he knew that there was a touring mineral collector within easy drive to his home, who did not stop in to see his collection and sale material, he would be very much put out. Whether you wish to buy or not, Cal Gettings would welcome you with open arms. If you like jade, see the stock of Robert Tesmer in Cleveland, Ohio. His material is reasonably priced.

New England will have its share of touring mineral collectors. There are so many localities to visit. It would be worth your while to make a determined effort to visit Schortmann's Minerals in Easthampton, Massachusetts. Peter and Edward's House of Minerals at Dorchester carries a large stock of minerals and if you are near Turner's Falls, investigate the stock of Kruger-Oakes Minerals. It would be the wise thing to do . . . to see some of the area collector-dealers. If one is not too familiar with New England specimens, it would be smart to buy a suite of them before entering the field.

There is much to see and do in the State of New York. Its mineral collectors and dealers are noted for their geniality and helpfulness. If in New York City, we would certainly not pass up the museums, nor would we miss stopping in to see the fine stock of Technicraft Lapidaries Corporation at 3560 Broadway . . . Ford's at 110 Wall St. . . . the Henry Schwab Lapidary at 73 West 47th Street. In Schoharie is R. Veenfliet for fossils and mineral specimens, Don Hurley at Little Falls, and Claude A. Smith of Herkimer "Diamond" fame at Geneva. The Ace Lapidary at Jamaica should be a delight for cutters to visit. Don't miss Ward's in Rochester!

We know that readers of ROCKS AND MINERALS read the ads, but we would like to point out that a famous Paterson collector-prospector, Mr. Howard Hewitt, 142 Carroll Street, Paterson, N. J., has opened up the Merryall Mine near New Milford, Connecticut. It may be possible he is at home when you visit Paterson, and not being able or permitted to visit the famous Paterson quarries, you may have time to visit Mr. Hewitt and see what he has so far taken from his mine. Of course, we would not miss a visit to the very interesting Paterson Museum, where the lovely Paterson area minerals, as well as the wonderful display of Franklin specimens are to be seen. Curator Casperson will prove a most genial host and make you wonder what is wrong with the average museum with their standoffishness and don't-bother-us attitude. Newark has its John S. Albanese. Perhaps you may be able to arrange a visit to view his superb world specimens and select a few to take home.

Philadelphia has the famous Academy of Natural Sciences with one of the World's best mineral displays. A few minutes drive will take you to the Commercial Museum where Dr. Charles Toothaker is Curator, a most interesting

mineral collector in his own rights. Then there is Jaffe's Mineral and Lapidary Supply Company, at 3212 West Dauphin Street, where you will see many things dear to the heart of the mineral collector.

The above suggested side trips for the purpose of visiting the dealers in areas in which you find yourself while on tour, are, to our mind, important, though we have, by no means covered the subject thoroughly. So, take along some back numbers of your favorite magazine, ROCKS AND MINERALS, and consult the many ads for addresses of dealers and collectors who have advertised in recent months. You will not only see locally collected specimens, but also world specimens of note and importance. Also you will meet the dealers who have successfully added much to the hobby of Mineralogy and kindred phases. Museums have displays of locally collected specimens, but the dealer can be relied upon to show you much more, and one can see them and, in some cases, actually handle them and subsequently own them . . . an impossibility in a museum.

As we have readied this script to send to Peter Zodac, we have received a package from the Mission Curio Mart in Tucson, Arizona. It contained superbly lovely azurite geodes, walnut sized azurite spheres with a hollow crystal-lined center. They write that there are not too many of these left, but that they have other copper, lead and zinc minerals for the tourist to select from. The azurite balls are not new to oldtime collectors, but they are as lovely as ever, and the Mission Curio Mart still has some of these rare nodules for sale. Mr. A. J. Gude, III, of Golden, Colorado, also sent, in time for this writeup, a very complete set of all of the important crystal forms printed on high grade stiff white paper in such a way that they may be cut out and folded, then pasted together to make very attractive crystal models. To say that these cutouts are accurate and that they make exact crystal models is an understatement. Mr. Gude is a crystallographer and draftsman of unusual ability. Should the touring mineral collector find himself near Golden, by all means look up Mr. Gude and see his assembly of expertly executed crystal models. His cutouts are inexpensive and, to the serious collector, they should be bought, worked up and displayed along with the actual natural crystals wherever possible.

This M. S. G. department may be the last for a little while, as the M. S. G. is working a great deal of overtime including Sundays for the current defense effort. The large amount of letter writing necessary to form this department is the reason. When we get back to normal, the M. S. G. will be glad to help the buyers and the dealers get together once again via these pages. We wish to thank those who have contributed material and data and the spirit of cooperation shown. Practically all material sent in will be distributed to seriously mineral-minded Boy Scouts, the potential buyers and collectors of tomorrow.

A. L. FLAGG IN CHARGE OF ARIZONA MINERAL EXHIBIT

PHOENIX, Ariz.—For the sixth straight year, A. L. Flagg is serving as Superintendent of Minerals at the 1951 Arizona State Fair, Nov. 3-12.

When the fair opens this year the exhibit in the minerals building will be bigger and more complete than ever before,

Flagg is one of the best qualified men in the field to serve as Minerals Superintendent, having been a consulting mining engineer for many years. He came to Arizona in 1906 and except for six years spent in mining exploration in Mexico his activities have centered in the state. His personal collection of minerals, gathered during the last 57 years, is one of the outstanding ones in the field.

"I don't go in for glamour in my specimens," he said, "but try to concentrate on the specimens of real scientific value." His private collection of uranium ores is one of the most extensive and complete in the country.

It was Flagg who first started competition in mineral collections at the fair in 1947. He is most interested in the junior "rockhounds" and sponsors special exhibits for them. The junior classes are open to all grade schools in Arizona and some highly competitive contests develop each year. The schools compete for the Phelps Dodge Corporation trophy which becomes the property of the winning school during the year in which it is won.

In addition to the permanent exhibit and the competitive exhibits, the always popular fluorescent exhibit and special exhibits will be on display at the 1951 event.

THE PENNSYLVANIA ANTRACITE REGIONS

By J. KENNETH FISHER
147 Fairlamb Avenue, Havertown, Pa.

In Eastern Pennsylvania, the term "The Coal Regions" means the Pennsylvania Anthracite Area. The entire area is divided into three main sub-areas: 1, the Northern or Wyoming Field, with the cities of Carbondale, Scranton, Wilkes-Barre and Nanticoke; 2, the Middle Field, subdivided into the Western Middle and the Eastern Middle. In the Western Middle are the cities of Shamokin, Mt. Carmel, Ashland and Shenandoah. Hazleton and Freeland are the large towns in the Eastern Middle Field. This field is sometimes called the Lehigh Field. 3, the Southern Field, with Pottsville, Minersville Tamaqua and Tremont.

People vary in their reactions to the Coal Regions, some shunning the whole area and, if compelled to pass thru, hurry along as fast as they can, frowning a bit as their eyes fall on the harsh looking breakers or the even less sighly rock and culm piles. But this one rock hound never ceases to be fascinated by the Coal Regions and eagerly waits for the summer, so he may have another chance to visit the mines.

There are no marvelous crystals, as far as I know. A few not very wonderful pyrite xls.; two rare carbonates, nesquehonite and lansfordite, from the old No. 1 Tunnel at Nesquehoning; numerous rock crystals many of good quality; some carnotite from the base of Mt. Pisgah, near Mauch Chunk and a few fern impressions are about the only minerals in the coal. What attraction then can this area exert to cause a mineralogist to think it interesting?

The Coal Regions have been and still are the scenes of tremendous human activity. This region is probably the most intensely mined area on earth. Coal mining is still Pennsylvania's greatest industry. On my 1950 trip, I stood part way up the mountainside, just outside the town of Avoca, and watched a few cars hauled up a "slope." A slope is a mine shaft going into the earth at an angle. This particular slope went in at a downward angle and did not go into the earth in a straight line, but on a curve. A series of spools on the inside of the curve, spools not unlike large coffee cans, kept the pulling cable in the right place. I talked with one of the men (it is always interesting to talk to workmen) and this man pointed out the "old" colliery, where the coal used to be lifted. This was a mile and a half away. Further over, he pointed to two sheave wheels sticking out above the houses. He said, "That's where our miners go down into the mine." "How many miners?" I asked. "Oh, about 200," was his answer. Just then a truck dumped a load of enormous coal chunks into a hopper near where we were standing. "That came from the stripping," the workman said, pointing to the far side of the valley, where a scar, dimly visible thru the three mile distance, showed where the shovels were "stripping" the coal that lay near the surface. "We're mining coal all under here," my informant went on, waving his hand so as to include all the space in front of us, under the road by which I had arrived, under the town, under the railroad, under the whole place. All that valley, as far as one could see, was hollow, not unlike a sponge, with regular rows of borings going from side to side, all made by the burrowing miners in following the coal seams. And yet it all looked as solid and stable as a town down Lancaster way, resting on firm earth all the way to the earth's core. And things were yet more remarkable; for there were not only the borings at the level of the slope out of which I watched the cars hauled; there was another seam below this one and another one below that and another below that and another and another, something like a layer cake, the strips of chocolate icing between the layers representing the coal; the cake between the icing being the barren rock. It all seemed so simple and yet it was breath-taking to stand there and try to comprehend fully it all, something that was actually much

different and much more complex than it appeared to be.

I watched a big truck sail along the concrete state highway. It sailed along just as trucks did going thru my own home town, built on good earth, solid all the way down. But beneath this truck was scarcely ten feet of solid ground and then there was the mine opening, with its coal cars coming up and going down ceaselessly. Sometimes in the coal regions the earth caves, falls in, because the amount of prop left is insufficient and some truck, or some roadway, or some field, or someone's house drops down because the support underneath is too weak.

Standing there on the mountainside, it was interesting to contemplate what was there before you, to think about the enormous, but almost entirely hidden activity, to try to visualize all that was happening, both visible and invisible. Here was an interesting place, I was pleased: this was a reason why I liked to visit the Coal Regions.

Another activity when visiting Anthracitia, is to work from old maps and charts, attempting to trace out old slopes, planes, railroads, canals and so on, now nonexistent or changed from their original location. I had with me a Second Penna. Geological Survey map of 1888 which showed the location of the old inclined plane that was the exit for coal from the Carbondale basin from 1840 to 1900. Eight small planes, one following the other, made up the whole "plane." At the top of the last plane, on top of the mountain above Carbondale, that is, began a gravity railroad, that ran downhill the thirteen miles to Honesdale. There the coal was transferred to boats on the Delaware and Hudson Canal, whence it found its way to the New York market. I had, on this trip, come up from Honesdale to Carbondale and had, on the way, searched out and walked along a portion of the right of way of the old gravity railroad. Rails had been torn up long ago. The right of way was much overgrown, but the boundary fences were still in place and the remains of ties and bridges were still there for the historically minded to look at and reminisce about.

Standing there, I thought that once this bit of earth was enormously busy and important: now it had fallen to quiet ruin. Nothing moving disturbed the scene, except a couple of cows in a nearby field and a couple of equally quiet fishermen fishing in a pond over which a brick arch of the old railroad still stood, silent reminder of busier times. Fom this section of the old railroad I went on to Carbondale. Using the old map, I had followed the route of the first four planes when I was in Carbondale last year. These planes started at the D & H shops in the town and ended just beyond where the plane intersected the Carbondale - Honesdale State Highway. There is a concrete monument near the D & H shops, at the foot of Plane No. 1. Bolts sticking out of the Monument doubtless indicate where a bronze marker had been. There is no marker on the monument now; possibly it was taken by vandals. The path of the plane is easy to follow, much bestrewn in the lower part by a mixture of town refuse and mining waste. Where the plane crosses the Honesdale-Carbondale road is one of the familiar blue Penna. Highway Historical markers. This road sign and the plaqueless monument at the foot of the plane are the only markers to be found along the plane, the road along which passed, for a considerable time, almost the entire coal output of the Carbondale area. "Sic gloria mundus transit."

The previous summer (August, 1950), I began at the blue Penna Road sign and followed the old planes to what I believe was their end, up near the top of the mountain, the mountain, that is, that forms the east wall of the Wyoming Valley above Carbondale. Beyond the road marker there was less refuse. The plane rose steadily, curving slightly eastward as it climbed, curving into the mountain and away from the valley. The walk was long and hot. As elevation was gained, a splendid view of the valley below unfolded. At resting intervals, it was pleasant to stand, let the cool breeze blow

over you, and gaze out over the superb scene. The plane, still rising, gradually turned into a little cove. The topography became rougher, rocks more noticeably numerous, streams dashed down the mountainside pell-mell. The path narrowed, the mountain closed in on one. There was food for thought in contemplating how, a little over a hundred years ago, the pioneers in the development of the Carbondale coal area must have traversed this same route, under infinitely more primitive conditions, in doing, first the laying out and later the actual building of the planes. The end of my walk brought me to the upper end of the mountain cove, with slopes rising sharply in front and sides, angles of rise from 45 to 70 degrees. Up the slope directly in front of me the plane and the coal it carried, evidently made its final escape from the Wyoming Valley. From the top, some 150 feet above where I was standing, the gravity railroad took over and the coal cars rolled down to Honesdale. I had walked for at least two hours (it seemed longer), so in deference to my weary legs and the fact that the day's hours were passing fast, I did not climb that final steep slope. Perhaps that will be next year's pleasure. It would have been a severe climb, as much of the plane had been destroyed by a storm in 1941. To the right of where the old plane left the valley, there was another slope, rising for about 75 feet and at an angle of 70 degrees. This plane was in ruins, but it was evidently newer than the old plane that I had been following. The 75 feet didn't seem too formidable, so I scrambled up the 70 degree slope, getting to the top after some slippery scrambling. The top consisted of a small platform, seemingly natural, altho it might have been man-made, because, straight ahead, in the mountain was a badly caved mine entrance. It seemed difficult to believe that there could be coal so far up on the mountain: the seams usually come to the surface much further down, but there was the mine entrance, a drift, going straight into the mountain. The view from that tiny platform, so high up, near to the summit was wonderful, almost breath-taking. Man's activities were far removed. There were only the mountain, the trees, the rocks, the dashing streams, with glimpses, splendid glimpses, of the valley, far off below. I enjoyed this place for some time before turning to the return trip. Walking down was easier than walking up, but somehow I got on a side road, an offshoot of the main plane, and found that I was "lost." I made a direction guess and took an obscure path that led in a down direction. By the sheerest luck I came out exactly at my car.

The entire walk was some 3½ hours and exceedingly interesting. I didn't find any crystals. The most mineralogical thing that I saw was the evidence of where some town prospectors had gone up the plane and had done some digging. In one place they (or he, or even perhaps, she) had laid bare an outcropping of anthracite scarcely six inches below the surface. I had the feeling of being almost a pioneer discoverer.

Coal is coal to most people. They know little about its story and care even less. It is said that there are those, who, never having seen coal in any other state than in the regular sized pieces in the coal delivery trucks, think that coal grows on coal trees, stove coal on the large stove coal trees, pea coal on smaller pea coal trees and that people in the coal regions harvest the coal each year as farmers harvest apples. Far different, of course, is the actual happening. Even those knowing the correct geological story, however, do not realize that coal is far from being uniform that it varies from bed to bed, from region to region and even from neighborhood to neighborhood. A worthy collection could be made of coal specimens from the various veins and from the different fields. Coal from a strip mine at Forest City showed pronounced cleat, both vertical and horizontal, coal from underground at Avoca (Russell Coal Co., no charge for the plug) was almost completely amorphous. Some "hard" coal is very hard, some is rather soft. Coal from the Panther Valley (western end of the

Southern field) is very dense and free of pockets. Thus it is admirably suited for cutting those gleaming novelties of polished coal which are so eagerly sought for by some collectors. So, the matter goes of the varying characteristics of coal from different places. There are said to be people in the coal regions, who can tell at a glance from what field and from what particular vein in any given field, any piece of coal had its origin.

Speliologists are cave investigators. In some people there is a strong lust for this searching of holes in the ground. To such a person a trip thru Anthracitia is pleasure piled on pleasure. You can scarcely go a half a mile in any direction without some opening, tunnel or slope or drift literally beckoning you to come over and give it a look. I can no more pass a mine opening than a child can pass an ice cream wagon, so I had a glorious time inspecting this or that slope or drift or shaft. I need scarcely say that to enter any mine without a guide, or unless one leaves some one at the surface while you are below, is risky to the verge of foolhardiness. As I had no one with me, I did not enter the openings more than a few feet, being content to gaze into the suggestive darkness and speculate as to what lay beyond my limited vision. Even with this partial participation, being an anthracite speliologist was lots of fun.

Then there are the people in the coal regions. Always friendly, they are interesting talkers, full of anecdotes and stories and tales of the mines. There is a belief that mineralogy needs an Izak Walton to put its tales and lore in writing, so to be the stimulus to mineralogy that Izak was to the fisherman. It might be a good project for some philanthropic foundation to go to the coal regions and record the tales and stories of the coal valleys, as some have gone into various back countries and recorded interesting folk cultures. Almost any casual conversation with a coal region's native will turn up some interesting story about the mines. Talking with a "bootlegger" near Gilberton, on one trip, he, after telling me of his "mining," pointed to a garage, a couple of hundred feet away. "One morning, when I came out to get my car," he said, "the ground caved and I fell in." By this he meant that the ground had given way and he had slid down into the mine diggings under his garage. Quite a surprise to a citizen out to get his car from the garage on a quite morning. "I came out over there," he went on, pointing to a place more than a mile away down the valley. "The coal company filled the hole and I got my car out alright," was his final comment about this early morning happening.

Coal breakers can be brutally unbeautiful. Some of them seem to say that men set out to build as unattractive a structure they could. Such a product some coal breakers are, gaunt, ungraceful, unpainted, unloved. One such is the old Erie Breaker at Mayfield. A breaker in use is unlovely, but it at least looks strong, virile, useful. An abandoned breaker, on the other hand, is unlovely and has, in addition, the negative characteristics of being broken, feeble and useless. An abandoned mine does not show its decay, its body is underground, its crumbling passageways invisible to the passer-by. The passing to ruin of an old breaker is not only visible, but, on account of its hugeness, it literally thrusts itself into the eye of passing peop'e. Once strong, these old breakers are reduced to falling apart piece by piece, rust replacing paint, holes appearing in the sides, posts leaning crazily at odd angles. It is one of the sad sights man has to view. Such a one is the abandoned Cranberry Breaker, just west of Hazleton, Cranberry, a large breaker sits out in the open, on a commanding site at the crest of a sharp rise, about one-half mile west of the city. It is by itself, there are no other structures anywhere near it. Hideous scars of worked out strip pits lie on all sides. The main road curves about its base. The breaker, a ruin, sits on top of its hill, a small island of ruin in the midst of a sea of ruin. It was evening when I drove out to Cranberry. The shadows were already long, making the somber sight of the unused structure even more grim. If

it had voice one might imagine it saying, "I am old and worn out and in my old age, man who once swarmed about me, has deserted me." To add to the effect, the road, stretching westward to Shenandoah, is probably the world's ugliest road. All about are the deep cuts made by strip mining, waterfilled at the bottom, a mixture of discarded mining gear strewn here and there, little or no vegetation able to grow on the stony slopes. The whole scene is suggestive of a mixture of Dante's Inferno and Hell's Half Acre. And yet, breakers need not be ugly and harsh. The Jeddo breakers, just east of Hazleton, some of the Glen Alden Company's breakers, some of the Lehigh Coal Company's breakers and doubtless others that I have not seen, are neat and well painted, not at all the unpleasant eyesores that some are. Near Nanticoke is one colliery having buildings and grounds truly a model of neatness and good taste. I stopped long to look at this example of what can be done to make a mining plant attractive in appearance.

As are the breakers, so are the mining towns, some are spick and span, neat, well painted, pleasant to look upon. Then will come a town dishevelled, unkempt, unpainted, ugly.

As it is with the breakers and the towns, so it is with the schools of the mining towns. A building in Audenreid, with scarcely discernable gold letters over its front saying, "Audenreid School" was as ugly a building as it would be possible to dream. To picture it used for school work was doubly unpleasant. I do not know if that building is actually the Audenreid School or not. A town person approached as I stood gazing at the dim looking agglomeration of wood, stone and glass. I was going to ask her (it was a woman) if that really was the Audenreid School, but I did not ask her. I was afraid that she would say that it *was* the Audenreid School. What is now still a maybe, could, by her words, have been made a certainty. As I left the matter, there was still a chance that it was not the town school anymore. At any event, for a school, the building was cheerless, dull and ugly. The view, if one looked out the front windows of the building, was also singularly bare and cheerless. A treeless, bushless, grassless flat area of cinders extended a full quarter of a mile, ending at the dark buildings of a colliery, Honeybrook Colliery, I believe. A landscape completely lacking in any elements of beauty or charm. So much for Audenreid. Washington and Lincoln Schools, in Carbondale, with their sloping, cinder covered front yards, their high weeds, their broken pavements, and eroded play space, would never capture any medals for attractiveness. Much different was the Forest City High School. Here some one had seen to it that the grass was cut, the windows cleaned, the shades tidyly drawn, the building neatly painted. The school spoke neatness and care.

So it was as one went from place to place: breakers, towns and schools, some neat and well kept up, others slovenly and unattractive. People create what they really want to create.

I have read in newspapers and heard people state by word of mouth, that this town or that has the prettiest, wittiest girls. This is a phase of coal region life that is reserved for study in the future, a kind of rich vein kept for exploitation at some time not yet here. It might be a suitable field for some younger mineralogist.

So the days of the trips are spent, trying to visualize the magnitude of the mining work, enjoying the scenery of the coal valleys, tracing out the once much used but now forgotten adjuncts of mining, drawing lessons from the breakers, the towns, the schools and the people, indulging our speliological instincts, by poking about the mine openings and in general having an interesting time of it. Of course, one gathers pieces of coal, pieces from this vein and pieces from that, until one has enough coal aboard to half stock a bin for the winter. But it is all fun, as the vacation days pass all too swiftly. The trip home is quickly accomplished and you and your friends inspect the various chunks of coal that you

brought back. During the winter, you plan and scheme just what you can do the next time you can get an opportunity to visit the mines. I never miss a chance to visit interesting Anthracitia, scene of human activity, creation of human exertion.

Editor's Note: The Editor spent a few years in the anthracite mines of Pennsylvania, chiefly at Tamaqua, as a young mining engineer for the Lehigh Coal & Navagation Co. (the oldest coal mining company in America). Underground a large anthracite mine is even more interesting than on the surface. The workings extend for miles and are large, well ventilated and safe. The electrified narrow-gauge mine railroad, the numerous fire bosses shanties (small but neat concrete one-room structures equipped with benches, tables, shelves, pictures, clocks, electric lights and heaters, telephones and cats as mascots) are gathering places for miners and especially when it is time for lunch. The underground stables, numerous passageways, etc., are all intensely fascinating. I once made an important telephone call home (in Peekskill, N. Y.) from a fire bosses shanty deep down in the anthracite mine at Tamaqua.

Breaker—the large structure in which coal is broken, sized, and screened for market.
Colliery—a large anthracite mine is called a colliery.
Plane—a mine railroad (often only a few hundred feet long and generally narrow-gauge) extending from the bottom of a hill or mountain to its top.

A FEW NOTES ON THE OAKLAND SHOW BY ONE OBSERVER

(California Federation Convention Held June 22-24, 1951, at Oakland, Calif.)

Held in the magnificent great open space of the Oakland Exposition building, the committees were certainly put to it to fill it—they did and quite gracefully. The overall impression is one of such a great wealth of material that only after you leave and review the exhibits in your mind does full appreciation arrive.

The committees had certainly done a terrific amount of hard work and undoubtedly deserve commendation. However there was no folder, for general distribution to the public, put out by the society or the federation to advise the uninitiated of their ideals, aims or objects and the atmosphere was cold.

The dealers booths looked good. They had uniform signs and plenty of space for display, one of the neatest setups for them we have seen.

Many of the mineral societies had done themselves proud and their displays were a credit to the show. It is to be hoped that they all get an award of some sort. I was so bold as to ask about the judges but was given a juvenile brush off.

The great private collections, of course, were outstanding and the preponderence of guards around the faceted gems, along with the price tags, subtracted from the lowly cabochons, polished specimens and mere crystals. By the attention they attracted was shown how to place emphasis.

Jim Conley's collection of picture agates would stand hours of examination, the Barnes complete dinner service of Onyx is beyond ordinary comprehension, Mrs. Hirsch's collection of polished specimens, each one excels the highlight of every average collector's top piece.

The Fluorescent display was certainly perfectly set up but was not receiving the attention it deserved.

Wesley Gordon's display of the work and findings of his Boy Paleontologists was worth a trip to the show and a little conversation with Wesley most inspiring.

Renewing old acquaintances was most pleasant and seeing Freddie Eyles again, a great pleasure.

A. E. Davies

COLLECTOR'S COLUMN

Conducted by A. CAL LECTOR

This column, designed to be a help to beginners in Mineralogy, began with the September-October, 1948, issue. In the last issue we discussed corundum. This time let us observe dolomite, one of the common minerals.

Dolomite

Dolomite was named for the French Geologist, Dolomieu, who observed that the rock was different from ordinary limestone in that it did not effervesce freely with cold acid. Some present day writers restrict the term dolomite to the mineral, and use the term dolomite-limestone for the rock. One more progressive writer suggests the name dolostone instead of dolomite-limestone.

Dolomite is the carbonate of calcium and magnesium in the ratio of one to one. Small amounts of iron carbonate may replace some of the magnesium carbonate. It occurs in cleavable masses and as rhombohedral crystals, often with curved faces. Small sub-individuals are frequently arranged in regular angles to form saddle-shaped crystals. Dolomite is transparent to translucent and ranges in color from colorless to white, gray, pink, green, and brown to black. One of the varieties has a pearly luster, hence the name pearl spar. Dolomite is distinguished from calcite, which it resembles, by its greater hardness (3.5 to 4 as compared to 3 for calcite on Moh's scale) and by its resistance to attack by cold acid. It also has a slightly higher specific gravity.

Dolomite is very abundant as dolomite-limestone, occurring in extensive layers, often of great thickness, such as in the "Dolomite Alps" of southern Tyrol and the "Lockport Dolomite" around Lockport and Niagara Falls in western New York.

Crystals of dolomite are common in pockets in these dolomite-limestones and are occasionally found in common limestone.

Fine crystals have been found in the Binnenthal, Switzerland; Traversella in Piedmont, Italy; the lead mines about Derbyshire, England; and Guanajuato, Mexico.

Fine crystallized specimens are frequently found in the United States. At Joplin, Missouri, it is associated with chalcopyrite. At Rochester, Lockport, and Niagara Falls, New York, fine groups are found with fluorite, celestite, gypsum, and calcite. Specimens of large pink curved crystals, speckled with minute chalcopyrite crystals, and associated with calcite are occasionally found near Blue Ball, Lancaster County, Pennsylvania. Large yellow transparent crystals have been found in talc at Roxbury, Vermont. Geodes from Harrodsburg, Indiana, and the Keokuk district of Iowa, frequently contain groups of pink and white crystals.

Fine cleavable material with a dark pearl gray color has been collected recently at Delight, Maryland.

Dolomite should be one of the first minerals with which to start a collection. If you have not acquired specimens yet, may we suggest that you contact your favorite dealer; he has some.

CHICAGO MUSEUM RECEIVES FOSSIL COLLECTION

Chicago Natural History Museum has received the paleobotanical collections of the Walker Museum of the University of Chicago as a gift from that institution, it is announced by Clifford C. Gregg, director of the museum. These extensive collections were assembled during a period of nearly 50 years by expeditions, purchase, and donations from many individuals. They include fossil plants from various geological ages and from many countries. They will supplement collections of this type already possessed by the museum and provide records from ages not heretofore represented in the paleobotanical collections. This gift will permit expanded activity both in exhibition and research in the field of paleobotany.

THE AMATEUR LAPIDARY

Conducted by COMMANDER JOHN SINKANKAS
1107 S. Oakcrest Road, Arlington, Va.

Amateur and professional lapidaries are cordially invited to submit contributions and so make this department of interest to all.

A CURVED FELT BUFF FOR POLISHING

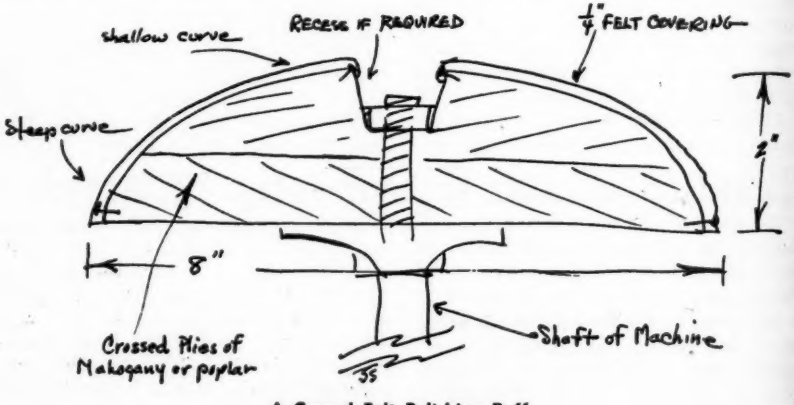
In general, two types of polishing buffs are in use by lapidaries, amateur and professional alike. The first is the usual rock-hard solid compressed felt wheel running in a vertical plane. The second is a sheet of felt placed upon a backing disc of some sort, plywood or metal, and usually running in a horizontal plane.

Several serious disadvantages beset either of these devices. In the case of the vertical felt wheel, it is difficult to keep the wheel satisfactorily moistened with water and polishing agent because centrifugal force tends to throw both off. As a result, frequent wetting is necessary to prevent the wheel from drying out and overheating the stone. Naturally there is considerable slop and waste of polishing powder.

For those who use the horizontally-mounted felt disc, it is found that polishing of flats is almost impossible to do well particularly in the case of square-cut or sharp-cornered stones. Such stones can be polished on the extreme edge of the disc but only with considerable difficulty and hazard. The horizontal buff holds its moisture well and similarly is not as wasteful of polishing agent as the vertical wheel buff.

In order to get away from the defects inherent to each of the above systems, a curved buff was designed and built by the author of this column. This buff is turned from wood and covered with a thin sheet of felt (see diagram). Two thicknesses of wood are used for two reasons, for one, wood two inches thick is not conveniently come by and second, crossing the plies adds strength and dimensional control. It will be noted that a recess is turned in the top of the buff to accommodate the fastening nut which holds the buff to the shaft. It is also feasible of course, to screw the buff to a flat metal plate which in turn screws or rest on top of the drive shaft of the machine. For those who possess a horizontal lap the latter method should be very attractive.

Assemble the buff by crossing and gluing together two selected pieces of wood, poplar (sometimes called white-



A Curved Felt Polishing Buff

wood), basswood, teak, and mahogany are among those that are suitable. Turn on a woodworking lathe and sand smooth. Varnish thoroughly with a good grade of spar varnish. After the finish is dry, stretch ¼" felt sheet over the buff. Select pure white medium hard sheet for this purpose.Soak the sheet for 10 minutes in boiling water to render pliable. Then starting at the top of the buff, tack it in place around the nut recess; work it down smoothly toward the bottom and tack all around. Use copper tacks as small as will hold well. The soppy felt should easily stretch so as to eliminate every incipient wrinkle and the finished job should be perfectly smooth. In the case of buffs not requiring a screw-down nut, no tacks need be used on the top at all.

After the felt is thoroughly dry, the bottom edge is trimmed nicely to the edge and the buff prepared for use. Prepare a watery thin mixture of cerium oxide in a wide-mouthed jar, brush the suspension over the felt thoroughly, it should soak in promptly. The mixture used must be WATERY, never so thick that it becomes creamy. A pinch of Tide added to the water will help to assist soaking.

The buff may now be run at about 500 RPM for 8" buffs and more or less as the diameter varies, and further charging with polish accomplished.

Feed the mixture at the top where centrifugal force will spread the water thru the buff. To judge the proper degree of charge, the buff should be definitely damp but not soppy. As polish is used up white areas will indicate this fact. Recharge accordingly. This is one of the advantages of using cerium, it shows clearly the places where more polishing agent is needed. If too much water is used this fact will evidence itself soon enough in the form of a heavy spray leaving the apron of the buff, merely let the buff run for a few minutes without recharging.

In using this buff, avoid most carefully the altogether too natural tendency to polish in one spot, keep the stone moving about so as to wear the buff evenly and avoid ridges and shallow spots. Felt is too expensive to throw away by using only a small area of the buff and wearing thru, forces a re-cover job.

A brief examination of the curvature of the buff should convince you that you need this buff. Note that the bottom edge is almost vertical, this approximates the ordinary wheel-buff. The top is almost flat and approximates the flat buff. Thus the curved buff combines the features of both types and as will be seen eliminates their disadvantages. The curvature of the sides of the buff can accommodate any flat surface whatsoever and can even get partially into hollows. Flats and ordinary cabs can be polished with no strain and with little hazard. This buff is extremely economical of polishing powder since centrifugal force allows water to escape but the fibers of the felt effectively trap the particles of polishing compound. If slower polishing speed is needed, use the top of the buff, and conversely use the bottom part for faster speeds.

The curved buff can be used in any position but the horizontal one is considered best. Note that in this position, the polishing of extremely large sections is easily accomplished, even if the sections are 12" or more in width.

When used in the horizontal position, line the tub with newspapers. When you are thru, merely remove the papers and your tub is clean.

When replacing worn-out felt, be careful in prying up the tacks to avoid damaging the wood. Old felt hats, carefully cleaned, are good on this buff but may have to be steamed a little longer to get rid of the hat-shape. Soft felt of any kind can be used but develops bumps and wears rapidly.

To summarize the advantages of this buff:

1. It can cover any spot on a flat or cab.
2. By selecting the proper point of curvature, high or low pressure can be exerted on the stone.
3. It is very economical.
4. It can handle BIG stones.
5. This buff can be made any size, cheaply.

6. You can adapt this principal to make special buffs for polishing the insides of ash trays, etc., or hollow buffs to polish spheres. The latter can be further adapted to make a tumbling barrel for polishing beads.

BRACELET AND BUTTON TO MATCH

By LUCILLE SANGER

Stone Canyon, a breccia jasper, is one of the most satisfactory for ladies' jewelry. The various colors in it make a harmonious stone to wear with costumes of almost any color. It is especially good with shades of brown and green.

The bracelet and button described herein were designed to be worn with a one-button suit with bracelet sleeves.

Cut and polish three Stone Canyon jasper stones, 1 inch in diameter. They should have rounded tops, not spherical, as this would make the button too heavy, but neither should they have flat tops. A flat cushion should be achieved.

To make the bracelet: Cut a band of 18 gauge sterling ¾ inch wide and the desired length. (The standard length for a spring bracelet is 6 to 6½ inches.)

Cut 2 circles of 18 gauge sterling 1¼ inches in diameter. Smooth the edges of both circles and band until they have a rounded worn appearance. Cut 2 strips of 26 gauge bezel, ⅜ inch wide and 2½ inches long.

Fit the bezels to the stones, remove and solder the joints. Place the circles on the band and solder them into place as shown in Figure 1. Hammer the bracelet over an anvil to fit the wrist but bending the circles as little as possible.

Fit the bezels to the circles, leaving a ⅛th inch border around each. Draw around the inside of the bezels with a stylus and remove them. Mix a tripoli paste and cover the back of the bracelet where the circles are soldered to it. Cover the centers of the front of the circles, leaving a quarter inch border next to the stylus mark, as shown in Figure 1. Also cover the bezel joints, inside and out. Let dry thoroughly. This may take overnight, but be sure the tripoli is dry.

Carefully fit the bezels into place and wire securely. Flux well and let dry. Flux again and place small pieces of solder around the joint and let dry. Solder.

Soak in water to remove the tripoli. Pickle well, wash in clear water and dry. Set the stones, and after removing all scratches, polish to a bright finish.

To make the button: Cut a circle 1¼ inches in diameter of 22 gauge sterling. Cut a bezel of 26 gauge sterling 2½ inches long. Fit the bezel to the stone, remove, and solder the joint with first joint solder.

Smooth the edge of the circle until it matches the edges of the bracelet. Fit the bezel into place, leaving ⅛ inch border around the outside. Draw around the inside of the bezel with a stylus. Using a pencil, draw another line *inside* the stylus line by ⅛ of an inch. Draw a bar 1/16 of an inch wide across the center of the inner, pencil line circle. Erase the circumference lines which cross this bar. There are now two nearly half circles

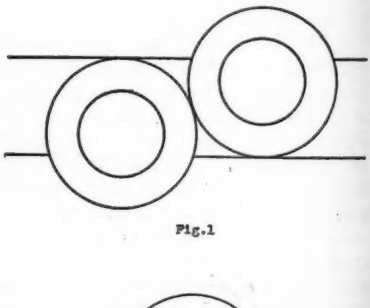


Fig.1

Fig.2

Shaded part to be sawed away in Fig. 2.

showing on the botton. Saw these out as shown in Figure 2. Smooth the new edges.

Again fit the bezel to the circle, leaving 1/8 inch border around the outside. Wire securely into place and flux. Let dry. Place small pieces of solder around the joint and flux again and let dry. Solder. Cover the joint inside and out with tripoli paste and let dry thoroughly.

When the tripoli is dry, turn the button upside down and clean a small space in the middle of the bar across the back. Flux and let dry. Place a small piece of solder on the spot and flux again and let dry.

Make a ring of 20 gauge wire on the round nosed pliers. This should be about 1/8 of an inch or so in diameter, and is to be used to sew the button to the garment. Fit the joint snugly together and file the outside of it slightly flat so it will fit well against the bar. Now place it on the small piece of solder on the bar and after solder, fluxing the ring joint.

Soak the button well in water to remove the tripoli paste. Pickle well and wash in clear water. Set the stone and remove all scratches. Polish to match the bracelet.

Editor's Note: Mrs. Sanger and her husband, Arthur, are co-authors of the popular new book, CABOCHON JEWELRY MAKING, published by Charles A. Bennett Co., Inc., 3040 Duroc Bldg., Peoria 3, Ill. The book sells at $3.50 a copy.

TURGITE IN DUTCHESS COUNTY, N. Y.

By PETER ZODAC

Turgite is a hydrous iron oxide generally dark red to almost black in color. It is a common mineral at limonite mines.

The old abandoned limonite mines of Dutchess County in southeastern New York had lots of turgite in them and even today the old dumps furnish many specimens which often are of good quality despite their exposure to air for years. Three of these mines are listed below.

At the old Amenia mine, at Amenia, very fine specimens of turgite have been found encrusting limonite, also hematite. Turgite is lustrous black ("patent leather limonite") with almost flat tops so that some specimens resemble miniature mesas of the western plains.

At the Clove mine at Unionvale, turgite is very common as lustrous black thick crusts coating limonite or lining the inside of geodiferous limonite.

At the Sylvan Lake mine, near Sylvan Lake, turgite is fairly common as lustrous black botryoidal crusts on limonite.

The name "patent leather" originated during the days when the mines were in active operation, especially those at Ore Hill, Conn., where unusually fine turgites had been found. The lustrous black turgites often resembled closely, in color and appearance, the patent leather shoes which were then in style, hence the term "patent leather" limonite.

Some miner, too, in those days, conceived the idea that the appearance of many turgites could be greatly improved if their smooth rounded sides were first smeared with shoe or stove polish and then rubbed briskly with a cloth. He tried it, the results were excellent, and soon "all" miners were polishing turgite that were to be sold or given away to friends. This practice is said to have originated at Ore Hill, Conn.

5 Year Renewal!

Editor R & M:

Enclosed find my check for $15.00 for which please renew my subscription to R & M for five years.

I find your publication both interesting and instructive, and, in my opinion, the most comprehensive in its field. Francis W. See
Bronx, N. Y.

June 23, 1951

CLUB AND SOCIETY NOTES

Attention Secretaries—If you want your reports to appear in the Nov.-Dec. issue, they must reach us by October 15th—The Editor.

Chicago Lapidary Club

Report on First Annual Amateur Handcrafted Gem and Jewelry Exhibit, May 19-20, 1951

It is estimated that before all three phases of the Chicago Lapidary Club's First Annual Amateur Handcrafted Gem and Jewelry Exhibit ends the middle of July, conservatively 65,000 persons will have viewed the prize winners! At the Exhibit in Grand Crossing Park where the judging was done on May 19th, 1200 people attended. The Chicago Natural History Museum, where the prize winners are on exhibit during the month of June, estimates that a large percentage of the 100,000 visitors expected this month from all over the country will see the exhibit. C. D. Peacock, who will display the prize winners the first two weeks in July, estimate 1,000 people a day will see it during twelve business days.

There were 165 entries, from all over Chicago and its suburbs, from all six of the Park classes, and all four of the Chicago clubs. Entries were divided between the three craft classifications of novice, intermediate and advanced, and between the nine craft divisions, with all types of lapidary and jewelry work being exhibited.

There were nine Best of Show Ribbon Awards, and with five of these went Best of Show trophies. In addition there was a ribbon and Trophy grand award, the Robert A. Dalzell Memorial Award for Best—Best of Show, which was won by Helen and Goff Cooke.

Four phases contributed to the success of the show—the five outstanding judges—the wide group of major awards, 102 in all, with an opportunity for everyone in every classification which attracted many people—the special exhibits—and the comprehensive rules and regulations governing the exhibit.

Plans are already being made for the Second Annual Amateur Handcrafted Gem and Jewelry Exhibition, to be held on May 17-18, 1952. Judging will be done on May 17th, and the Exhibition of the Prize Winners at the Chicago Natural History Museum will extend through the month of June. Marshall Field and Company will display the prize winners in their jewelry department for two weeks beginning the second week in July.

Plans For Next Year

At its meeting on June 21st the Chicago Lapidary Club adopted a 14 point program designed to make membership in the Club valuable to its members both from craft and social standpoints.

The most outstanding of these points follow —Not one, but *three* interesting and instructive speakers for each of nine meetings, September through May. Next, a basic course in lapidary. (Nine step by step lectures by qualified club members and others.) Also, a basic course in jewelry making. (Nine how-to-do-it lectures also by qualified club members and others.) Nine instructive lectures on related phases of lapidary and jewelry making by nine of the most outstanding qualified outside speakers available.

Further plans include a Monthly Lapidary Competition for Club Members for a "Gem of the Month" ribbon award. A monthly display of gems and jewelry made by members will be made, showing work of perhaps a half dozen members at a time. The club will continue to have an Annual Gem and Jewelry Auction of fine material, and plans several field trips thru the year.

Plans are already in the making for the Second Annual Amateur Handcrafted Gem and Jewelry Exhibition, to be held May 17 and 18, 1952. Following the original exhibit and judging the prize winners will be on display at the Chicago Natural History Museum for the month of June, 1952, followed by display in the jewelry section of Marshall Field and Company for two weeks in June.

Newly elected officers for 1951-1952 are: President, J. L. Cunningham; Vice-President, Floyd Robinson; Secretary, Mrs. Florence Swan; Alternate Secretary, Mrs. Gladys Board; Treasurer, John Stefans.

Membership is open to all qualified craftsmen in the Chicago and suburban area.

Florence Swan, Secretary and
Director of Public Relations Bureau
8249 Ellis Avenue
Chicago 19, Ill.

Columbian Geological Society

Twenty-eight members of the Columbian Geological Society of Spokane, enjoyed an all day excursion to the Spokane Molybdenum Mine about 70 miles north of Spokane on May 13, 1951. The group enjoyed perfect weather and had a picnic lunch enroute.

The Rock Hounds scouted around and dug up specimen of the following minerals. Chalcopyrite, Pyrite, Malachite, Fluorite, Molybdenite, Ferrimolybdite, Sphalerite, Arsenopyrite. These were found in granite and pegmatite dikes.

C. J. Hubbard
433 Waverly Place
Spokane 12, Wash.

Queens Mineral Society

The Queens Mineral Society held its regular meeting on February 1st, 1951, at the Church of the Resurrection, 8501 118th Street, Richmond Hill, N. Y.

The meeting was called to order at 8:25 P.M. Mr. Curt Segeler, presiding. Minutes of previous meeting read.

Report of the Membership Committee: Motion was made and carried to accept Mr. Marvin M. Rosson as a member.

After a recess we had a very interesting talk by Mrs. Bernadette Marcin on Connecticut minerals and localities with excellent mineral specimens displayed. Subjects discussed:

Division of Connecticut into three geological sections. East and West Highlands, much eroded; divided by the Triassic Valley, which is lowland containing sedimentary sandstones, diabase, basalt, also some conglomerate as in New Jersey.

Some of the Connecticut locations discussed: Glacial gabbro dump at Middletown contains 41 or 42 different types of rock. In trap rock at Meridan, New Haven and Mt. Carmel, albite, spodumene to cymatolite, datolite, andalusite and gypsum were found. In the igneous rocks of Prospect Mountain Mines, Litchfield, nickel. In the contact metamorphic deposits changing to limestone at the Tungston Mine at Trumbull there is wolframite, scheelite, topaz, feldspar and scrap mica. Igneous deposits, not so deep, crystallized at moderate depth at the Iron Mine, Roxbury; a fault zone mine, good specimens of siderite, arsenopyrite and sphalerite were found. The Connecticut Valley Copper Mine, Bristol, furnished malachite, azurite, and chalcocite. In the pegmatite of Strickland Quarry, Portland, uraninite, lepidolite, beryl, columbite and autunite were found.

After a lively discussion the meeting closed with each and all hoping to visit these locations once again.

March 9th, 1951 Meeting

The meeting was called to order at 8:15 P.M. Mr. Segeler, presiding. Minutes of previous meeting considered as read.

Motion was made and carried to open a bank account for the club.

A suggestion was made that one of the members write to Mr. William Hazlett Upson congratulating him on his story of uranium published in the SATURDAY EVENING POST. Mr. Wellman agreed to write.

After a recess we had a round table discussion on the Modern Technics of Field Collecting. Mr. Fredericks, Leader, and Mr. Stadler, Observer. Mr. Fredericks said that one must work, not expect to find minerals just looking. Also one must recognize what is looked for and where. Look for the contact metamorphism in limestone, light and dark area in rock and rusty rocks showing iron. In trap rocks lines of quartz to vugs. Pick up, by heft, if light could be a geode. Also look for bumps on schists as an indication of garnets. Mr. Fredericks also said that Dana is still an excellent index for occurrence but in many instances names are changed, as an example, Mink Pond, N. H. is now Pearl Lake, a staurolite location.

Mr. Segeler spoke on pegmatites and the theory of zoning. As at Bedford, the core of feldspar which in appearance is similar to a floating mine around which stems protrude. These are surrounded by quartz, then mica and then country rock. At the contact zones are the best accessory minerals, beryl and columbite.

Mr. Koerber said that Franklin, N. J., willemite will fluoresce thru snow with the long wave ultraviolet light. He also said in locating Herkimer "diamonds" watch for black stains on limestone.

Field Equipment: Sledge hammers are essential. The weight of the sledges suggested by different members was 7 to 20 lbs., but the weight selected by the individual best suited for his own purpose is very essential. Levers are very helpful. Collectors should always keep their hammers in good condition. Mr. Vogt suggested soaking in water the night before a field trip and the hammer head will tighten with the expansion of the wooden handle. Mr. Stadler spoke about chisels. They should always be watched as mushroomed chisels are dangerous and they are liable to chip and allow slivers of metal to fly. Care in resharpening chisels must be taken to get the proper angle. If sharpened they must be tempered before using. A shield should always be worn as protection for the face and eyes when breaking rocks. A dust protecting mask can be purchased from a store carrying welding supplies and is approved by the U. S. Safety Service. Heavy toed shoes are very helpful. Mr. Prible suggested a 3 pronged long handled rake as very useful.

A collector should never encrouch on another collector's diggings. Ask if the collector is finished before you start to work.

The Queens Mineral Society held its 14th Annual Dinner Meeting at the Jamaica YMCA on April 4th.

Dr. Ralph Holmes, Dept. of Geology, Columbia University, was the Speaker. He gave an illustrated lecture on clay minerals. His talk took us on a 15,000 mile trip thru the United States in his search for clays. An added attraction were pictures of some beautiful points of interest along the way. A rising vote of thanks was extended to Dr. Holmes for his very interesting talk.

Mrs. Ethel Woodward, Secretary
3413 80th Street
Jackson Heights, N. Y.

Newark Mineralogical Society
April Meeting

The April meeting of the Newark Mineralogical Society featured a quiz on the identification of common minerals conducted by our President, Al White, and Program Chairman, Edwin Skidmore. Participants formed into two groups, the Hexagonals and Monoclinics. Each member of the losing team had to present a specimen to the member of the winning team sitting opposite him. This is a good way to start friendly trading relations.

April Field Trip

Saturday, April 21st, 21 members of the Newark Mineralogical Society were guests of Dr. Sampson at the Princeton University Geological laboratories. For an interesting and different sort of field trip this one was hard to beat. A full account of this trip has been written by Wilfred and Mary Welsh and will be found elsewhere in the magazine.

April Weekend Trip

On the weekend of April 28th and 29th, 32 members of the Society went on a field trip to Pennsylvania which started at Perkiomenville and proceeded to French Creek where many of the common minerals were collected.

On the way to French Creek from Perkiomenville we passed a new Cadillac in a ditch off the road. We stopped our cars and in a matter of minutes, muscles hardened by breaking rock, had the car back on the road much to the thankful surprise of the owner.

Leonard Morgan, Chairman of the Outing Committee, brought along his charming wife and year old son, who after bruising his forehead on a rock was adopted by the club as a full fledged rockhound.

At French Creek we were met by Mr. and Mrs. Leonard Duersmith. He is Curator of minerals of the Franklin & Marshall College Museum at Lancaster, and recently elected President of the new Pennsylvania Mineralogical Society. They suggested we continue our mining operations to Cornwall, Pennsylvania, and after a council of war we agreed to do that the next day.

One group stayed in Cabins and another group camped out at beautiful French Creek State Park for the surprising fee of five cents each. After a delicious outdoor meal we turned in to get an early start next morning.

Going toward Cornwall the winding countryside was beautiful with the magic touch of spring's awakening. Here was an interesting contrast between the old time and the modern. Our cars whizzed by the quaint Amish wagons clippity-clapping along. Their occupants in broad-brimmed, flat-topped black hats and black sunbonnets content to take their time as we city folks hurried by.

The Cornwall diggings were very interesting and so tremendous that after digging all day with fine success we decided this locality needed a return visit, being one of the most interesting and rewarding that the club had been to.

We started home late Sunday afternoon weary, but content, filled with the beauty of the country and rich in the possession of its minerals.

May Meeting

The guest speaker at the May meeting of the Newark Mineralogical Society was Professor Rolf Edholm of the Geology Department of Upsala College, East Orange, N. J., recently of Sweden. His lecture was entitled "X-ray Identification and Determination of Minerals."

Professor Edholm's discourse on the subject chosen was very interesting and most instructive and was enjoyed by all present.

May Field Trip

On Sunday, May 20th, 48 members of the Newark Mineralogical Society met in the center of Pine Island, N. Y., to explore the mineral possibilities of Mts. Adam and Eve and surrounding territory. With the aid of a geological survey map, an article from the March 1947 ROCKS AND MINERALS and the ingenuity of our members we found our way up to Mt. Adam. The old granite quarry on the West slope afforded a breathtaking view of the countryside, but was disappointing in producing specimens. After about two hours of fruitless effort we wended our way down to lunch in a meadow where our cars were parked. There was a little brook here and as we ate our lunch we saw many beautiful species of birds who came to drink.

After lunch, 16 who remained despite a fine drizzle decided to hike across the onion fields to two limestone islands situated about one-quarter mile southwest of Mt. Adam. Except for the friendly feeling that existed between the members and the experience of walking through an onion field this area also was disappointing as far as mineral specimens were concerned.

We decided to make another try and after securing permission from Mike Kabylaski of Pine Island, we explored the Atlas quarry, his property, now mainly used to grow onions. This quarry is an abandoned limestone quarry and here we found some fair specimens.

At the end of the day three cars and nine members proceeded to the Buckwheat dump in Franklin, N. J., where one of the members found a half inch Franklinite crystal in matrix.

Despite the lack of good hunting we enjoyed the good company and the scenic beauty.

June Meeting

On Sunday, June 3, the Newark Mineralogical Society met for its last Spring session at the Newark Museum. Mr. Harold R. Magnuson, of the Museum's science staff, talked to the Society on "The Relation of Geology and Mineralogy in Northern New Jersey." This topic was timely because the Museum currently is showing an exhibit entitled "The Geology of New Jersey." The discussion summarized the major geological factors effective within the earth's crust to produce the equilibrium conditions required for the existence of

various mineral suites, and brought out the specific series of geological events which resulted in the production of New Jersey's most important mineral types.

Mr. Magnuson is a geologist and showed a fine grasp of his subject. His lucid explanations were enjoyed by everyone present.

At this meeting the members of the club decided to have a field trip of a week's duration to well known and interesting localities in Vermont and New Hampshire.

Gerry & Will Shulman, Co-Chm.
113 Huntington Terrace
Newark 8, N. J.

Pacific Mineral Society

The April meeting for Pacific Mineral Society had Mr. George Rigsby, who spoke on "Glacial Studies on Mount Rainier." Mr. Rigsby is a graduate student at California Institute of Technology. He has just completed an extensive research on ice-flow which will soon be published in a well known magazine. His talk was illustrated by Kodachrome slides.

Mr. Rigsby states that "Present is key to the past," then explained that Yosemite Park is a good example of what remains after a glacier has passed thru a section. The cause of the ice age is unknown and there are 15 to 20 theories on it. Certain rocks indicate that they were buried perhaps two miles deep. Mt. Rainier in Washington has the highest glacier cones in the Cascade Range of mountains. There are 26 glaciers on this one mountain. Some glacier deposits are between layers of lava flows on glaciers' unexplored sections. Glaciers in Alaska may be found between 80 and 90 miles long, as the one found on Mt. Logan in Alaska with an elevation of 19,850 feet which is the second highest peak in North America.

Measured temperatures have been taken down to 200 feet in glaciers. Ice flows in interior but very little at surface. During the survey on the Emmons Glacier on Mt. Rainier it was found that the ice moved as much as 8 inches a day. At the lower end of the glacier the White River begins by flowing from below the glacier, after having been on the surface and then disappearing below the ice several times. The surface of the glacier is discolored by foreign material picked up in its downward travels.

Tests of the ice are made by taking thin sections of about one-half inch thick of ice, this is then melted down to 1/8 inch thick and placed on an instrument called a "stage" and then melted down almost to postage stamp thickness. A section ready for study may be 3/100 of an inch thick and about four by six inches square. When viewed by the powerful instrument one crystal may take up all the six inch surface of the thin section or again it may have around thirty grains in the one section. Light is reflected thru poloroid lens to get axis to tell the speed and age of the glacier. In its travel the ice in melting forms a table of a rock balanced on a leg of ice until the ice melts letting the rock roll down and and again the snow will melt away leaving the rock balanced in the air. The face of the glacier will appear dirty until an avalanche will break and leave a white surface.

The temperature of the glaciers in Alaska have been measured to below freezing at 50 feet depth in winter. In the spring, water runs down and freezes which raises temperature, the 50 foot depth decreases in 10 days. At 100 foot depth the drainage does not penetrate and is solid ice. Glaciers in Alaska have been found to be between 2000 and 3500 feet thick.

The movement of a glacier may be eight inches in the center and at the rate of 2½ inches at the sides while the tip may only move a few inches a year. Glacier on Mt. Rainier is receeding 70 feet a year and thinning by surface melting.

The last group of slides shown were of wild flowers both of Alaska and Washington, some were growing right on surface of glacier. The final picture was not of a sunset but a moonlight picture, a time exposure of 35 minutes, on the glacier, a scene to be remembered a long time by all who saw it.

Mrs. J. W. Ingledue displayed her collection of gold she found while in Alaska and other items of carved ivory and pictures that were very interesting. Dr. Foster had a very nice collection of minerals collected from several countries in Europe.

Myrtle Musselman
26327 Athena Ave.
Harbor City, Calif.

Southwest Mineralogists

Our annual show held last month was a happy occasion. We enjoyed meeting old and new friends who share our hobby. Henry and Carol Green won the sweepstakes prize with an extensive crystal display which included a crystal of chalcopyrite, quartz and marmolite. Frank and Connie Trombatore had an outstanding display of all the minerals found in Los Angeles County. H. H. Hodges displayed rocks found in California. Arthur and Thelma Rich displayed a study of the decomposition of feldspar from granitic rock forming sedimentary deposits of aluminum ore, potassium, sodium and calcium to the manufactured product such as dishes, pans, medicine, etc.

Elections were held and the new board for the coming year chosen. President, Cleive Zehrbach; vice-president, Arthur Rich; secretary, Mrs. G. T. Bailey and corresponding secretary, Marion Thomas.

Victor Arciniega will speak at our July meeting on Atomic Ores.

Beatrice Zehrbach, Cor. Sec.
5127 W. 118th Street
Hawthorne, Calif.

Mineral and Gem Society of Castro Valley

The regular monthly membership meeting of the Society was held on Friday evening, April 13, in the Cafeteria of the Hayward Union High School when Mr. and Mrs. H. C. Mahoney of the East Bay Mineral Society of Oakland discussed the selection and polishing of jade material. Mrs. Mahoney showed some unusual specimens from the Orient, Alaska and California in connection with her talk and Mr. Mahoney urged members of the Society to support the State Federation Mineral Show which is to be held in Oakland, June 22-24.

Don Wills, Chairman of the special committee for the Society's participation in the Federation Show, reported that a display case had been procured which would accommodate an exhibit of 25 to 30 specimens from the Society. He said that additional entries by individual members may be made providing the exhibitors supply their own display cases for the purpose.

President Al Breeden appointed Von McBride of Oakland to serve as General Chairman of arrangements for the Society's Third Annual Picnic, Installation of Officers and Auction which is to be held on Sunday, June 10 in Redwood Park. F. W. Buhn was appointed chairman of the Nominating Committee for the annual election of officers, assisted by Tom Dambak and Floyd Dudgeon. It was agreed that a Junior Member should be included on the Society's Board of Directors this year. The election will be held at the next regular membership meeting on Friday, May 11, in the Cafeteria of the Hayward Union High School.

President Breeden thanked General Chairman Tom Robb and all others who helped put on the Society's successful Third Annual Mineral Show last week.

May Meeting

At the last regular monthly membership meeting of the Society last Friday evening, May 11, in the Cafeteria of the Hayward Union High School, J. M. Blair of Berkeley discussed and displayed his remarkable collection of agates and minerals which he has collected from sources throughout the world.

This was followed by the annual election of the following officers to serve for the ensuing year: *President,* Al Breeden (incumbent); *Vice-President,* Tom Robb; *Secretary,* Mrs. Alice Robb (incumbent) of Castro Valley; *Treasurer,* Mrs. May Meyers (incumbent of Hayward; and *Director,* Von McBride of Oakland. These new officers will be installed at the Society's Third Annual Picnic and Mineral Auction which will be held on Sunday, June 10 at the Fire Circle in Redwood Regional Park. Director Von McBride is General Chairman of the event and Jim Meegan of Castro Valley is expected to serve as auctioneer.

President Breeden urged all members to donate mineral specimens and cutting material for both the Auction and the grab bag to be conducted by the State Federation Mineral Show which is to be held at the Exposition Building in Oakland on June 22-24. Ted Saling was appointed Chairman of a Special Committee to handle the collection of these grab bag items which are to be sold at the Show to help defray exhibition expenses.

Don Willis, Chairman of the Display Committee for the Show, announced that 20-30 pieces will be entered in the Society's display case and called for volunteers to help in the work of his Committee. The Society donated $15.00 to the East Bay Mineral Society as a contribution towards the expenses of the Mineral Show.

Mrs. Natalie Mahoney announced that there would be a million dollar diamond exhibit and a remarkable carved jade collection from Gumps of San Francisco at the Show.

The Society's next overnight field trip was announced for Saturday and Sunday, May 19-20 to Lombardy's Ranch in Lake County. All participants were asked to take sleeping bags and food for two days.

Arthur B. Emmes, Pub. Chm.
7845 Castro Valley Blvd.
Castra Valley, Calif.

Pomona Valley Mineral Club

The regular monthly meeting of the Pomona Valley Mineral Club was held on May 8 at 7:30 P. M. in Room 8 of the Chemistry Building of Pomona College, Claremont, California.

The speaker of the evening was Mrs. D. M. Clark of the Orange Belt Mineralogical Society, whose subject was "A Rock Hound Abroad" which was an account of her travels in Europe extending from Norway to Italy.

Due to the excellent showing made by this Club last year with its mineral exhibit at the Los Angeles County Fair at Pomona, the management has requested the Club to again sponsor this year's mineral exhibit at the Fair to be held this Fall.

J. A. LeBrun
Publicity Chairman

Mineralogical Society of Penn.

The Mineralogical Society of Pennsylvania held its first field trip to Wood's Chrome Mine (Lancaster Co., Penn.) on Sunday, May 20th. Fifty Rockhounds braved the pouring rain, and many fine specimens were found. The junior section were eager beavers in digging holes and swinging mawls. At the close of the day, the Swap Fest, was a sight to behold. Everyone is eagerly awaiting the next trip. For details of membership contact either Helen M. Bauhof, 352 Church Lane, Phila., 44 or Walter H. Bancroft, 5321 Wakefield Street, Philadelphia 44, treasurer.

Helen M. Bauhof
352 Church Lane
Philadelphia 44, Penn.

Connecticut Valley Mineral Club

President, Mrs. Benjamin Shaub; Vice-President, Raymond Schortmann; Secretary, Otto Bartels; Treasurer, Raymond Robert.

Meeting place, Museum of Natural History, 236 State Street, Springfield, Mass. Time, first Wednesday of the month at 8 P. M. except during June, July, August and September.

October, 1950, general meeting and report of summer field trips. Notable specimens of pyromorphite, wulfenite and cerusite from the Loudville, Mass., lead mines were shown, and a large green tourmaline crystal from Strickland Quarry, Conn. November, 1950, Mr. Otto Bartels spoke on the abundance of the elements in the earth's crust and their typical minerals. December, 1950, Dr. Mitchell A. Light of the University of Massachusetts spoke on Introduction to Petrology at the U. of Mass. in Amherst.

January, 1951, Dr. Benjamin Shaub of Smith College spoke on the Gouverneur, N. Y., mineral localities. A good picture of Dr. Shaub and friends can be found in Ward's November, 1950 Bulletin.

February, 1951, Joe Rapalus and Jack Kitson gave a gem polishing demonstration. The finished gem was set and presented to the lucky lady. Our lapidaries had an eye-catching display of their finished works.

March, 1951, Dr. Benjamin Shaub demonstrated the inexpensive cardboard crystal models.

April, 1951, Dr. George W. Bain of Amherst College spoke on the Alcan Highway and the heavy minerals that are found in the heavy sands of the gold dredges. The minerals were mounted for observation under binocular microscopes in the Amherst College laboratories.

May, 1951, General meeting with refreshments. The field trip committee reported on summer trips. The first trip will be to the Barite and Trap localities near Cheshire, Conn., on June 10th.

Otto Bartels, Sec.
376 Amostown Road
W. Springfield, Mass.

Humboldt Gem & Mineral Society

The monthly meeting of the Humboldt Gem and Mineral Society was held Friday, April 27th, with president Frank Loveless presiding. Secretary-Treasurer, George Morgan, read the minutes of the previous minutes and gave the financial report. A. W. Porter, committee chairman for a Society exhibit to be entered at the Humboldt County Fair at Ferndale, submitted plans pertaining to same. Paul MacMillan, field trip chairman, gave a resume of the Society trips taken to Oregon, Big and Dry Lagoons. Everyone agreed that a good time was had at these trips and that some good pieces of agate, petrified wood, jasper, sagenite and californite were found. Our hostess, Marian Graham, introduced the visitors.

Perry Delaney introduced our guest speaker, Mr. George Lampke, who spoke on Alaska. Mr. Lampke had resided in Alaska for the past six years as an engineer and photographer for the government. At present, he is teaching in Arcata but will return to Alaska upon completion of the school semester, where he will rejoin his family. Mr. Lampke spoke on the Flora and Fauna in Alaska as well as the great mineral deposits there. Colored slides gave a vivid picture of the life in that country.

At the conclusion of the rock raffle, refreshments were served by the committee in charge of Mrs. Lois Petterson.

May Meeting

The monthly meeting of the Humboldt Gem and Mineral Society was held May 25 at the Eureka Junior High School with president Frank Loveless presiding. Secretary-Treasurer, George Morgan read the minutes of the previous meeting, read correspondence and gave the treasurers report. Under old business, plans for the exhibit at the Humboldt County Fair was once again discussed by chairman of that committee A. W. Porter. Under new business, Mrs. Kay Pettingill was named to fill the post of editor of the society bulletin, vacated by Mrs. Clory Drake who will be leaving for the Bay area. Marion Graham was named to fill the publicity post, also vacated by Mrs. Drake. Guests were introduced by hostess Marion Graham and Frank Loveless introduced the guest speakers Dr. and Mrs. William Lanphere who showed colored slides of field trips and discussed opals and rocks in general. Refreshments concluded the meeting.

Paul MacMillan gave a report on field trip to Covello, Calif., where jade, jasper, and jasp-agate were found.

Mrs. Clory Drake
268 Wabash Ave.
Eureka, Calif.

Orange Belt Mineralogical Society

The June meeting of the Orange Belt Mineralogical Society was held at 2 P. M., Sunday, June 3, 1951, in Perris Hill Park, San Bernardino, Calif., inaugurating a summer series of picnic meetings. Regular lecture meetings will begin in early October at San Bernardino Valley College.

Plans for the California State Federation of Mineralogical Societies' convention to be held this month in Oakland were discussed. It was also announced that 45 members in 15 cars had attended the Horse Canyon field trip in late May.

The Orange Belt Mineralogical Society will hold its Fifth Annual Gem and Mineral Show in San Bernardino at the National Orange Show's Industrial Building, November 3rd and 4th. This event has attracted thousands in the past.

As I am only an interim secretary pending the election of a corresponding secretary, you had best direct any correspondence temporarily to Mr. Adolph Dosse, president of the Orange Belt Mineralogical Society, Route 2, Box 66, Fontana, California.

The Whittier Gem and Mineral Society

Pres. F. R. Croft Sec. Mrs. K. W. Tharp

The Society met on April 3rd, the speaker for the evening being Jack Estlick. Mr. Estlick's subject was "Rocks from Montana." The sapphires, garnets, amethyst, smoky quartz, petrified wood and the well known Montana agate found in this state were discussed. A report of the field trip to the Castle Buttes on April 1st revealed that specimens of agate, jasper, and petrified palm were brought back.

On April 17th Walter Abramson told about his trip to the Dawson and Ashley Mines at Pala, Calif. Mrs. Blanche Hutchison told about her trip to Twenty-nine Palms and the dry lake at Amboy.

On May 1st a film "Nickel Plating" was shown. At this meeting the younger members of the society. The Junior Rock Hounds, were given bags of specimens donated by the older members. This made quite a hit with the Juniors.

Mr. Edwin S. Roth of 1554 Hill Drive, Eagle Rock, Calif., was the speaker for the May 14th meeting. Mr. Roth gave a very interesting and instructive talk on The Quartz Family of Minerals. He covered the subject from the atomic "build up" of the SiO_2 molecule to the crystal, its different forms and further, the different types of quartz, its occurrences and uses. He then showed many specimens from his extensive collection.

On April 21-22 Anthony Berkholz was the leader on a field trip to the Double Butte Agate field.

O. L. Evenson
10722 Rose Hedge Drive
Whittier, California

2nd Annual Show—October 20th

The Whittier Gem and Mineral Society are making plans for their Second Annual Gem and Mineral Show at the York Riding Club House, one mile south of Whittier Blvd. on Santa Fe Road.

The Show will be open Saturday, October 20th from 10 a.m. to 10 p.m. and Sunday, October 21st from 10 a.m. to 6 p.m. Admission Free, Dealers, Door Prizes and plenty of free parking

Kenneth W. Tharp
438 N. Gregory Avenue
Whittier, Calif.

Pacific Mineral Society

At the May meeting we were fortunate to have Mr. Milton E. Gray of the Erb and Gray Scientific Instruments, who brought us a most helpful and practical discussion.

Mr. Gray outlined the growth of optical aids from the early use of the sphere in Egypt to the highly developed varieties of the Zeiss laboratories, and the final cooperation of Holland, Italy and Germany resulting in 87 kinds of glass in 1938.

Mr. Gray explained that the variable factors in the construction of these instruments are, kinds of glass, optical density, shape of glass, illumination, retardation of light, partial exclusion and focal length.

Many questions were asked and kindly answered about identification of minerals with polarized light. The use of calcite, nickel, the prisms and illuminative controls were explained.

The 6 power doublet and the 14 power triplet are recommended for general work. The low power or stereoscopic and the high power or biological binocular are the types manufactured.

He gave us a "rule of thumb" for deriving the power by dividing the normal visual length of 10 inches by the focal length.

Our monthly display of specimens included some rare items. Mrs. Dorothy Craig and Mr. R. H. Milligan kindly exhibited some of their best.

Our display Chairman, Dr. Foster gave us Geological specimens from the Mohave Desert.

The librarian, Mr. A. R. Zwashka, issued the new catalogue. The list of books and magazines is very good, and will prove most useful.

R. Royer
1234 W. 41st St.
Los Angeles 37, Calif.

Christian Rock Club

A letter dated July 15, 1951, has been received from Rev. B. M. Heald, of Melrose, Mass. It reads:

"I have organized a Christian Rock Club. This is a unique club of "Juniors" whose parents are very co-operative. It is rather unusual to form a "Christian rock club" with the intention of first finding all the rocks and minerals mentioned in the Bible. By the way rocks and minerals are mentioned 1704 times in the Book. Special mention is made in the following verses: Rev. 21:19-20; Eze. 28:13; Ex. 28:6, 12; 1 Chron. 29:2; etc.

"We have had two field trips this summer—one to Grafton, N. H., and the other to Westmoreland, N. H.

"Anyone interested in our project for Juniors, ages 11 to 15 years, contact the writer—Rev. B. M. Heald, New England Sanatorium, Melrose, Mass."

BIBLIOGRAPHICAL NOTES

Colorado Gem Trails: By Richard M. Pearl.

One of the most mineralized areas in the world, Colorado is famous also for its gem minerals—agate, amazonstone, amethyst, aquamarine, bloodstone, carnelian, chalcedony, garnet, jasper, petrified wood, plasma, sapphire, smoky quartz, topaz, turquoise—all are found and all in good quality. So many tons of Colorado minerals have been distributed throughout the world—among museums and collectors—that one could almost sanely ask—"Are there any minerals left in Colorado?"

Colorado is a large state and is also the most mountainous in the Union. To reach its numerous localities, a guide or guide book is most essential. It would be a costly undertaking to hire a guide for the purpose of visiting even a few of them, if widely scattered, but for only $2.50 one can buy an excellent guide book (just out), written by an expert collector and full of sketch maps, mileage logs, and photos. This guide book, written by Dr. Richard M. Pearl, Assistant Professor of Geology at Colorado College, Colorado Springs, Colo., covers the entire state of Colorado and we recommend it highly.

In this new book, Colorado is divided into a number of regions — Western Colorado Plateaus, San Juan Region, San Luis Valley, Salida Region, Leadville Region, South Park, Denver Mountain Region, Rocky Mountain National Park, Northeastern Plains Region, Central Plains Region, Pikes Peak Region, Royal Gorge Region, and Southeastern Plains Region. Under each region, the important localities of the area (with their minerals) are described, directions given for reaching them (including mileage logs), and often a map appears. References appear also so that serious collectors can look them up if they wish. Latest information is given on local travel and collecting conditions and land ownership, so much desired by collectors who want to make the best use of their time. Gem and minerals societies that welcome visitors—museums that display outstanding collections—are all described. Localities noted for mineral specimens are mentioned in addition to gem deposits, so that collectors will have this valuable information while they are in the vicinity of each.

All collectors who may be planning to visit Colorado are urged to get a copy of COLORADO GEM TRAILS in order to make the trip a success. The book is 5½ x 8½ inches in size, contains 125 pages (with numerous sketch maps and photos) and sells for $2.50 a copy. Published by Sage Books, Inc., 1716 View Point Road, Golden 4, Colo.

Optical Crystallography: By Ernest E. Wahlstrom.

Here is a book that should be of special interest to crystal lovers and chiefly those who are more or less past the amateur stage of crystallography. This is a textbook whose chief purpose is to review the principles of optical crystallography theory. Emphasis throughout is on the immersion method of determining optical properties of crystals and fragments, because this method is the most widely used. The numerous illustrations—line drawings, half-tone reproductions, and stipple-shaded diagrams—occupy approximately 40 per cent of the book.

This is the second edition of Dr. Wahlstrom's OPTICAL CRYSTALLOGRAPHY. It is 6 x 9 inches in size, contains 247 pages, and sells for $4.50 a copy. Published by John Wiley & Sons, Inc., 440 4th Ave., New York 16, N. Y.

RESEARCHES ON URANIUM ORES

A collection of scientific papers concerned with researches on radioactive minerals and therefore of special value to geologists and mining men interested in uranium ores was published April 23, 1951, in Bulletin No 3 of the Geological Survey of Great Britain. The Bulletin forms a record of some of the work of the Atomic Energy Division of the Survey. It is published by H. M. Stationery Office, price 4s. 6d. (75 cents U. S. A.), by post 4s. 8d. for the Department of Scientific and Industrial Research, Geological Survey and Museum, Exhibition Road, London, S. W. 7, England.

A paper by C. F. Davidson and S. H. U. Bowie, 'On thucholite and related hydrocarbon uraninite complexes, with a note on the origin of the Witwatersrand gold ores', gives the first technical description of the uranium ores of the Rand goldfields, which have recently been the subject of a supply agreement between the British, American and South African Governments. These uranium deposits, the most important discovery of radioactive ore made since the atomic bomb, were first recognized and evaluated in 1945 in a joint investigation by Professor G. W. Bain of Amherst College, then Geological Consultant to the American atomic energy project, and by Dr. Davidson, Chief Geologist to the comparable British organization. There tends to be a sympathetic variation between the gold and uranium values in these ores and the two metals clearly belong to the same general period of mineralization. Strong evidence is brought forward that the uranium is of hydrothermal origin, and it is suggested that current ideas on the placer nature of the South African gold should therefore be revised. The gold-uraninite mineraliza-

tion is accompanied by the coal-like hydrocarbon 'thucholite', which has originated by the polymerization of hydrocarbon gases under the influence of radiation from the uranium mineral. Similar uraninite-bearing thucholite has been recognized in specimen amounts from lode deposits and pegmatites in many other parts of the world, notably from the uranium lodes of the Goldfields district, Lake Athabaska, Canada; from the copper deposits of Moonta in South Australia; from the Laxey lead-zinc mine, Isle of Man.

Other papers in the Bulletin comprise a comprehensive discussion by J. E. T. Horne on the phenomenon of fluorescence and other forms of photoluminescence in natural and artificial minerals, special reference being made to the uranium-bearing species; a review by S. H. U. Bowie on the applications of autoradiographic techniques in mineralogical and geological research; and a report by C. O. Harvey on chemical methods for the determination of small amounts of uranium in minerals and rocks.

New Hampshire Issues 6 Reports

The following 6 reports have been issued recently by the State Planning and Development Commission, Concord, N. H., and are obtainable at prices quoted:

Feldspar and Associated Pegmatite Minerals in New Hampshire: By J. C. Olson.
50 pages, 8 plates, 2 figures — 65c

Clays of New Hampshire: By Donald H. Chapman.
27 pages, 1 map — 30c

Foundry Sands of New Hampshire: By T. R. Meyers and W. C. Campbell.
32 pages, 1 map — 30c

Structural and Economic Features of Some New Hampshire Pegmatites: By H. M. Bannerman.
31 pages, 5 figures, 1 plate — 30c

The Geology of the Lovewell Mountain Quadrangle, New Hampshire: By Milton T. Heald.
29 pages, 11 figures, 1 map in pocket — $1.00

Geology of the Mt. Pawtuckaway Quadrangle New Hampshire: By Jacob Freedman.
34 pages, 12 figures, 1 map in pocket — $1.00

Guide to Geologic Literature: By Richard M. Pearl.

For a number of years Dr. Pearl has been interested in bibliographical methods and especially those relating to geologic literature. An Assistant Professor of Geology at Colorado College, Colorado Springs, Colo., he has made researches on the subject at a number of institutions, has assembled his notes, and now they appear in book form.

It is truly a guide book to the extensive and complex literature of geology and its related fields. It covers such topics as arrangement of the library, library catalogues, indexing, library service, index guide and bibliographies, and various kinds of geologic literature (abstracts, U. S. Government documents, state bulletins, books, newspapers, theses, unpublished manuscripts, and maps).

This is the first guide book to geologic literature, we believe, and is a most valuable publication for those interested in geology. It is 6¼ x 9¼ inches in size, contains 239 pages, sells for $3.75 a copy, and is published by the McGraw-Hill Book Co., Inc., 330 W. 42nd Street, New Pork 18, N. Y.

MINIATURE GEIGER AMPLIFIER GIVEN TO R & M

A letter dated July 2, 1951, arrived from Ronald L. Ives, 4455 Genessee St., Buffalo, N. Y. Part of it reads as follows:

"In checking over the equipment on hand recently, I came across one of the miniature amplifiers I made a few years ago. At that time, they were the smallest amplifiers in existence. Now, they are only of historical interest, the newer ones being only ½" x 1½" x 2". I am sending you this amplifier for your collection of miscellaneous items related to geology. A wiring diagram accompanies, and the device works, but it would hardly be economical to wire it up to $30.00 worth of batteries and $7.50 worth of tubes to try it out."

The amplifier weighs 5 ounces and is a nice piece of work.

EASTERN FEDERATION CONVENTION

of

Mineralogical and Lapidary Societies

in

WASHINGTON, D. C.

October 25th, 26th and 27th, 1951

For Further Information Write to

B. J. CHROMY, Sec.

811 National Press

Washington 4, D. C.